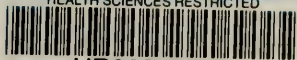


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THIRD ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

OF THE

STATE OF OHIO

FOR THE

YEAR ENDING OCTOBER 31, 1888.

COLUMBUS:

THE WESTBOTE COMPANY, STATE PRINTERS.
1889.

RESOLUTION OF THE BOARD RELATIVE TO PAPERS PUBLISHED IN ITS ANNUAL REPORT.

Resolved, That no papers shall be printed in the Annual Report of this Board except such as are ordered or approved, for purposes of such publication, by a majority of the members of the Board; and that any such paper shall be published over the signature of the writer, who is entitled to the credit of its production, as well as responsible for the statements of facts and opinions expressed therein.

MEMBERS OF THE BOARD.

	Term Expires.
*JOHN D. JONES, M. D., Cincinnati.....	December, 1888
SIMON P. WISE, M. D., PRESIDENT, Millersburg.....	December, 1889
D. H. BECKWITH, M. D., Cleveland.....	December, 1890
THOS. C. HOOVER, M. D., Columbus.....	December, 1891
H. J. SHARP, M. D., London	December, 1892
W. H. CRETCHER, M. D., Bellefontaine.....	December, 1893
EDWARD T. NELSON, M. A. Ph.D., Delaware.....	December, 1894
HON. D. K. WATSON.....	Attorney-General (ex-officio)
C. O. PROBST, M. D., Secretary.	

CURTIS C. HOWARD, M. Sc., Chemist, Columbus, O.

*Reappointed December, 1888; term expires December, 1895.

STANDING COMMITTEES.

Hygiene of Occupations and Railway Sanitation,
JOHN D. JONES, M. D.

Epidemic and Indemic Diseases and Quarantine,
S. P. WISE, M. D.

Topography, Meteorology and Hygiene of Public Institutions,
W. H. CRETCHER, M. D.

Water Sources, Sewerage, Drainage and Disposal of Substances Injurious to Health,
H. J. SHARP, M. D.

Especial Sources of Danger to Life and Health,
THOS. C. HOOVER, M. D.

Adulteration of Food, Drinks and Drugs,
D. H. BECKWITH, M. D.

Heating, Ventilation, Lighting and Hygiene of Schools,
EDWARD T. NELSON, M. A. Ph.D.

Vital Statistics, Registration, and Nomenclature,
THE SECRETARY.

Finance and Executive,
T. C. HOOVER, E. T. NELSON, W. H. CRETCHER.

OHIO STATE BOARD OF HEALTH,

OFFICE OF THE SECRETARY,

COLUMBUS, OHIO, *December 31, 1888.*

To His Excellency, J. B. FORAKER, Governor of Ohio:

SIR: In accordance with Section 8 of the "Act to create and establish a State Board of Health in the State of Ohio," the accompanying report is herewith submitted for the year ending October 31, 1888.

Very respectfully,

C. O. PROBST, *Secretary.*

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GENERAL REPORT.

The Third Annual Report of the State Board of Health of Ohio, for the year ending October 31, 1888, is herewith submitted.

The term of office of Dr. T. Clarke Miller having expired December 13, 1887, Prof. Edward T. Nelson, of Delaware, was appointed to fill the vacancy thus created.

The names and addresses of the Board are as follows:

SIMON P. WISE, M. D., <i>President</i>	Millersburg.
D. H. BECKWITH, M. D.....	Cleveland.
THOS. C. HOOVER, M. D.....	Columbus.
H. J. SHARP, M. D.....	London.
W. H. CRETCHER, M. D.....	Bellefontaine.
EDWARD T. NELSON, M. A., PH. D.....	Delaware.
JOHN D. JONES, M. D.....	Cincinnati.
HON. D. K. WATSON, Attorney-General, <i>Ex-Officio</i> .	

Four meetings of the Board were held during the year, all in the city of Columbus. An abstract of the proceedings thereof is given on a subsequent page.

Health of the State.—The State has, happily, been free from any wide-spread epidemics, and reports received indicate an average condition of healthfulness during the year. Measles prevailed to a very considerable extent during the latter part of the winter and first of spring, and would doubtless have reached the proportions of a wide-spread epidemic but for the fact of so many children having had the disease the previous year. We would repeat what was said in our last report in regard to measles: It should be treated in the same way as scarlet-fever or diphtheria, i. e. by isolation and disinfection.

Three outbreaks of small-pox occurred during the year, one at Coshoc-ton, one at Stringtown, and another at Oakley, near Cincinnati.

On another page will be found a full report of these outbreaks, and the measures taken to restrict the disease.

Small-pox is now present in a number of other States, and has been watched with considerable apprehension, as our State has been free from the disease in epidemic form for so long that vaccination has fallen into

general disuse, and the majority of our children are without this protection.

As delay in getting fresh vaccine virus very frequently permits an outbreak of small-pox to get beyond control, the Board arranged to receive a small supply every two weeks, and health officers and local boards of health were informed that virus would be furnished them immediately upon receipt of information of an outbreak of the disease. From our central position we are able to place virus in any part of the State in less than twenty-four hours from the first report of the disease.

It is now pretty generally conceded that better sanitation can be secured only by a greater, or rather, more universal knowledge of sanitary requirements.

The fact is gaining recognition that the people are, to a large extent, directly responsible for the diseases which afflict them, and when the art of preserving health shall receive the attention in our public schools that its importance demands, we may confidently expect to see a great reduction in the amount of sickness.

As the Board has been charged with the duty of disseminating among the people information in regard to matters affecting health, it was thought wise to issue a monthly periodical for that purpose, and commencing with January the Monthly Sanitary Record, a sixteen-page pamphlet, has been published each month.

As it has been entered for postage as second-class matter we are enabled through this medium to disseminate a large amount of useful information at a comparatively small cost.

There has been, as heretofore, a considerable demand for the circulars of the Board, relating to the prevention of contagious diseases, and over 100,000 of these have been distributed since the board's organization.

A second edition of the circular on the care and management of infants and young children was issued, the first having been exhausted, and copies were sent out freely during the hot months when diseases of young children specially prevailed.

The requests for this circular have been very numerous, both from this and from other States.

During the present year a circular on the prevention and restriction of glanders, and one on disinfection and disinfectants were prepared and printed.

According to the Live Stock Commission, glandered horses may be found in nearly every county in the State, and as the disease is of not infrequent occurrence in man, and is nearly always fatal, it is hoped the rules given for its prevention will be of much benefit to those coming in contact with horses.

Perhaps the most important work performed during the year, has been the organization of local boards of health under the law of last winter, requiring the establishment of a board of health in every town and village in the State of over five hundred inhabitants.

A copy of this law, with a circular letter calling the attention of mayors and members of councils to it, together with a set of rules and regulations, recommended for the adoption of local boards, was sent to every town in the State of over five hundred inhabitants. A blank was also enclosed on which the health officer was requested to report to us the names of officers and members of the board. These were sent out in May and June, since which time reports from one hundred and ten newly organized boards have been received.

Out of three hundred and six cities and towns in the State of over five hundred inhabitants, two hundred and fifteen now have organized boards of health. Sandusky, Fremont and Tiffin are the only cities in which boards have not been established.

Our greatest difficulty is in securing the establishment of boards in our smaller villages. The idea is held in many such places that a board of health is needed only in times of epidemics or small-pox, or other pestilential diseases. They will tell you their village is in a healthy condition, when they are having typhoid-fever and diphtheria nearly every year. In fact, a large number of our cases of typhoid-fever occur in small country towns, and no fact is clearer than that sanitary reform is generally more needed in villages than in cities.

As infectious disease in any part of the State is a menace to the whole, the State Board of Health should be given authority, in cases of emergency, to appoint a health officer in any town of over five hundred inhabitants that fails to establish a board of health. To such appointee should be delegated all the powers conferred on boards of health and health officers; he should be paid by the city or village which he serves, and should hold office while deemed necessary by the State Board of Health, or until a board of health shall have been established in such city of village.

We quote here from the report of Dr. Esch, health officer of Huron, Ohio, a village of eleven hundred inhabitants, to show what may be accomplished in small towns in preventing the spread of infectious diseases:

"All physicians are required to notify the health officer at once in case they have a case of diphtheria or scarlet-fever on hand; the health officer then placards the house and establishes a quarantine, maintaining it until the attending physician certifies that it may be raised. Not only are children kept from school, but no one is permitted to leave the house except by permission of the health officer. Since the above has been

enforced we have had several cases of diphtheria and scarlet-fever, but have always confined them to the houses where they first broke out."

Herein, we consider, lies the most important function of a board of health. Our warfare for the present must be chiefly upon what are now acknowledged to be the preventable diseases, which, as a rule, are the infectious diseases.

In respect to these, a board of health may be compared to the fire department, In both cases it is of the utmost importance that the earliest possible notification of an outbreak be furnished, that action may immediately follow the information.

Our fire department uses all possible precaution to prevent the spread of the fire, even to the destruction and removal of neighboring buildings, and would not think of leaving the spot until the last spark is extinguished. Should not infectious diseases be treated in a similar manner?

But to do this requires money, and if health officers are to look after and care for every case of infectious disease, they should be paid an adequate salary.

We have constantly urged upon local boards of health the importance of enforcing a rule requiring physicians to report all cases of infectious diseases, and we feel sure no right-minded physician would refuse to obey such a rule if proper use be made of the information.

The relations between the State and local boards are not as clearly defined as they should be.

It has been the policy of the State Board to refrain from all interference with the duties of local boards, and complaints sent in have invariably been referred to the local board having jurisdiction in the matter. Aid and advice have been freely given whenever requested, and conferences have been held when desired.

Several investigations have been made by the Board at the instigation of local boards of health or other authorities. One of these relates to the question of public water supplies.

Foreign companies often obtain franchises in towns to supply the citizens with water, and in some instances these companies are composed of irresponsible parties who resort to any practice to force upon a town a water supply which is defective both in regard to quantity and quality; more frequently, of course, the latter.

As this Board has been given the general supervision of the health interests of the people, and as nothing is more important to health than a sufficient supply of pure water, it would seem proper that larger powers be conferred upon the board in this matter. If it were not thought advisable for all public water supplies to be approved by the Board before

acceptance, it would certainly be well if the Board were able to prevent the acceptance of those which are manifestly bad.

The collection of vital statistics was considered in our first report. It has been abundantly proved by the results, not only in our own State, but in others, that it is impossible to collect facts in regard to births and deaths a year after their occurrence; nor can facts of such nature as are required be properly certified by any but attending physicians.

Our President, in his inaugural address, referring to the great value of a proper registration of vital statistics, says:

"Every human life is a unit in the great aggregate of the State, and each community, as well as the whole commonwealth, is responsible for the welfare and rights of every human being within its jurisdiction. Therefore, nothing can be more important than that a record should be kept which will accurately identify the individual and his family, embracing his birth, sex, nativity, color, marriage, residence and occupation, and that his age, and a correct statement of the cause and date of his death, and place of burial shall be given; and, lastly, that the local sanitary authorities shall be promptly notified of the same. Such registry record is not only an incalculable aid to the political economist and statesman, but it is more especially indispensable to the sanitarian. It is as essential to us as an accurate invoice of stock and good book-keeping is to the merchant, and without it the health affairs can never be successfully administered. We know that mortality is always proportionate to the causes of mortality, and unless we have reliable information on this point we have no means of knowing to what particular locality our attention should be directed. In short, we can never render a scientific report of the true status of the health of the State, nor can we make a reliable exhibit of the good that may have been accomplished by sanitary measures, without the assistance of well-conceived and carefully executed tables of vital statistics.

"The law provides that we shall supervise this registration, and recommend such legislation as will perfect the present system by which it is conducted.

"Now, to any one who is acquainted with the present methods, and knows the absolute worthlessness of the vital statistics of our State, such a requirement seems quite farcical, and it becomes self-evident that no scheme can be devised by which the present machinery could be made to yield more reliable results, as long as this duty devolves upon the assessors, and the statements of the laity alone are relied upon, as to the nature of disease and the cause of death."

We would again call attention to the necessity of an epidemic fund to be placed at the disposal of the Board, to be used on approval of the Governor, in preventing the introduction and spread of pestilential diseases.

During August and September, Ohio received a number of refugees from Florida, where yellow-fever was prevailing. Fortunately for us cold weather had come much earlier than usual, and we were then having occasional frosts.

While it is not likely that yellow-fever will ever rage in Ohio as it has in Southern States, its presence will always produce widespread panic among our citizens, with all the attendant interruptions to commerce and travel which come from enforcement of quarantine measures.

And as the State Board of Health would be expected to assume immediate control of any such pestilential disease introduced within our borders, there should be no question of means with which to work.

The correspondence of the office has been much larger this year than the previous year, which is hailed as indicating a growing interest in the work of the Board.

A number of complaints have been received in regard to nuisances existing outside the jurisdiction of local boards of health. Naturally relief is sought from the State Board, but we have been obliged to content ourselves with pointing out the means of redress provided by general statutes relating to nuisances. This nearly always necessitates a lawsuit between individuals, or, what is worse, between a private individual and some corporation, and the complainant, rather than take the risk, continues to suffer the nuisance.

It should be some one's duty to look after these sources of sickness and death, with the same powers to abate nuisances as are now given to local boards of health; and we would respectfully suggest that such powers be given to the State Board of Health to be used as occasion might demand. This, probably, could best be done by enabling the Board to demand of proper officials the enforcement of rules and regulations which would cover such cases.

Glancing backward over the past year's work, we feel that the duties which have been entrusted to our hands have been as faithfully discharged as circumstances would permit.

As the Board has not been given executive powers, aggressive sanitary measures have not been attempted. But by bringing before the people the results of the disobedience of sanitary laws, by disseminating information for the restriction of preventable diseases, and above all by securing a large number of active boards of health fully empowered to enforce the health laws of our State, work has been done which, we trust, will bear good fruit in future years.

ANNUAL ADDRESS

OF

JOHN D. JONES, M. D.,

President of the State Board of Health.

Delivered in Columbus October 10, 1888.

ANNUAL ADDRESS OF JOHN D. JONES, M. D., PRESIDENT OF
THE STATE BOARD OF HEALTH.

GENTLEMEN: Another year has passed, and it can justly be said that the time used has not been for naught. Much has occurred to prove that the appointment of a State Board of Health in Ohio has not been ill-advised. The amount of instructive literature sent out to the people has alone been the means, no doubt, of preventing much suffering and trouble. The practical inspections and sanitary conventions show that the work has not been allowed to lag. One of the most important strides the Board has gained is the success in having the law made in regard to "Local Boards of Health." While the law is good, much more can and should be done; as by means of efficient boards of health disease can almost always be stamped out.

In looking over the report of 1887 one can see that not only the Board but many of the profession and prominent gentlemen interested in science, have taken hold of the work of sanitation. With the proper guiding, there is no reason why the State of Ohio should not be in the foremost rank as a promotor of hygiene. The people at large have begun to appreciate the necessity of some board that should have the guidance and directing of sanitary matters, and to whom any person can apply for information, protection and instruction. One of the greatest matters of importance to the people of any country is that of quarantine. It was my good fortune to have been appointed, at the National Conference of State Boards of Health, one of a committee to inspect the quarantine stations from the mouth of the St. Lawrence river around our coast to the northern border of Oregon. With Dr. Benj. Lee, of Philadelphia, I made an inspection during the latter part of June of a section extending from New York harbor to the northern boundary of South Carolina. We found much that was good, and very many efficient and intelligent men. Also good laws. Still, very much remains to be desired.

The great port of New York, where 75 per cent. of the immigration and 80 per cent. of the tonnage arrives, requires many improvements in the way of space, buildings for grouping and hospital room, as well as better water supply, better drainage, a crematory for cremating the bodies of those having died from pestilential disease—in fact the requirements are many. Much money could be used here to great advantage.

Philadelphia is poorly protected, as the Lazaretto is badly placed, having no good water supply, no drainage, no means for proper fumigation, no staging for lightening vessels; and it is also too near the large and growing city of Chester.

It is impossible to move the station further down the bay, as no State has the right to use the land of another State; and to this existing condition of affairs, Delaware and New Jersey would object. Baltimore is the best protected, as far as a quarantine station goes. The port has good water supply, good drainage, plenty of hospital room, which is very well arranged; also, abundance of ground surrounding that could be used if necessary. Norfolk and that region has but ship quarantine, and the quarantine ground is in the way of traffic, so if a vessel loaded with pestilential disease arrives, it must stop until all die or get well, or move to some other quarter. Fisherman's Island, the marine station, is in a horrible condition, a sadly weak port, the poorest of quarters, no water supply; in fact every thing is to be desired. The same trouble exists at the mouth of the Cape Fear river, ship quarantine only existing. All of these points have men of ability and energy, but no money, and economical sanitation is expensive, and of little service, for no man can work as he should when in need of funds. With the conditions mentioned the only thing to be done is for the United States government to take absolute control of all quarantine stations, as then, all that will be necessary, is for the government to say a station shall be here or there, as may be required. Having the power over all, and the means to carry on the port properly, it will be well done. People in the interior should remember the great gate-ways for the entrance of diseases to be feared are on this sea-board, and all States should assist in the furthering of this idea and of endeavoring to have all necessary funds appropriated for the establishing and carrying on of strict and thorough quarantine. It is of more importance to the country to have such protection than to expend money for the building of forts that are so easily done away with by the modern mode of warfare. With rigid quarantine service there is no need that this country should ever have in the future such epidemics as have occurred, causing the loss of many people and much money to the country. In regard to the assistance this Board has received from the General Assembly, we have had little trouble, when the wants of the Board have been explained to the members. The report that has just been given to the public shows that the Secretary of the Board has been active and efficient, also that the members have been interested in the past for the benefit of many. I thank the Board for the courtesy shown me while in the chair, and trust that the future of the Ohio State Board of Health will be as bright as it bids fair to be.

JOHN D. JONES.

Secretary's Report.

ABSTRACT OF THE PROCEEDINGS OF THE BOARD AT ITS MEETINGS DURING
THE YEAR ENDING OCTOBER 31, 1888.

PROCEEDINGS OF THE NOVEMBER MEETING.

COLUMBUS, OHIO, *November 16, 1887.*

The meeting was called to order at 8 p. m. by the President, Dr. John D. Jones.

Present: Dr. S. P. Wise, Dr. D. H. Beckwith, Dr. Thos. C. Hoover, Dr. H. J. Sharp, Dr. W. H. Cretcher and Dr. T. Clarke Miller.

The minutes of the last meeting were read and approved.

On motion, the regular order of business was suspended, and Dr. E. R. Eggleston, of Mt. Vernon, who was present, was invited to address the Board on the subject of "Meteorological and Health Charts."

Dr. Eggleston presented charts showing the relation of diseases in Ohio, as collected by reports to the State Board of Health, to the prevailing meteorological conditions for the year as recorded at Cincinnati, Cleveland and Columbus.

A communication was read from Dr. J. N. Beach, of West Jefferson, Madison county, relative to typhoid-fever in that county.

The question of water supply and its relation to typhoid-fever was discussed at length by different members of the Board.

Dr. Sharp stated that he had not found time to formulate questions relative to water supply of towns, and suggested that the Secretary might relieve him of this work.

A communication was read from Mr. Allen Smalley, prosecuting attorney of Wyandot county, relative to the pollution of a stream at Upper Sandusky by the refuse of a paper mill. The Secretary was instructed to lend all possible assistance in the prosecution of this case.

Reports from standing committees were called.

Dr. Miller, by request, read his presidential address, which, on motion, was received and filed for publication in the Board's report for 1887.

The following reports were presented, received and filed for publication in the annual report:

"The Effects of Occupations on the Health of Individuals," by Dr. John D. Jones; "The Nature, Causes and Prevention of Cholera," by Dr. S. P. Wise; "Adulteration of Food, Drinks and Drugs," by Dr. D. H. Beckwith; "Special Sources of Danger to Life and Health," by Dr. Thos. C. Hoover.

The advisability of holding a second sanitary convention was discussed by Drs. Hoover, Sharp, Wise and Miller.

Dr. Miller stated that he had had some correspondence with physicians and others at Akron, and suggested that city as a place for holding another convention.

On motion, Dr. Miller was authorized to arrange for a convention at Akron, if deemed advisable. Dr. Miller requested that Dr. Beckwith and Dr. Wise be associated with him on this committee.

The President authorized Dr. Miller to call on any members of the Board for such assistance as he needed.

The Secretary, as chairman of the committee appointed to consider plan and price of publishing a monthly journal, presented a report.

The report was accepted, and a general discussion followed as to price, size, advertisements, etc.

On motion, it was voted to publish 1,000 copies per month of a journal consisting of sixteen pages, to be styled "The Monthly Sanitary Record," issued by the Ohio State Board of Health.

A communication was presented from the Secretary of the Ohio State Sanitary Association relative to the publication of papers read before the Association in the annual report of the Board.

Dr. Miller stated that at the last meeting of the Association the question of the Board's publishing the proceedings had been discussed, and that he had informed the Association at that time that the Board would be pleased to publish good papers not published elsewhere.

Dr. Beckwith presented a communication from Prof. E. T. Nelson, President of the Sanitary Association, relative to a joint meeting of the Board and Association, and offered the following resolution:

Resolved, That the chair appoint a committee of three, who shall be empowered to act with a committee of the Ohio State Sanitary Association in regard to the selection and publication of papers that shall be presented in the future.

The resolution was adopted, the chair appointing as members of the committee, Dr. Cretcher, Dr. Beckwith and the Secretary.

A communication was presented from the Barrett Publishing Co., with a bill framed by the probate judge of Wyandot county, for the collection of vital statistics.

On motion, a committee on Legislation was appointed, consisting of the following members: Dr. Jones, Dr. Beckwith and the Secretary.

Dr. Hoover tendered his resignation as a member of the Executive committee. The resignation was accepted, and Dr. Beckwith was appointed to fill the vacancy.

Dr. Jones was requested to secure samples of the water from the Ohio river at Cincinnati for analysis, and, if possible, a full report of the epidemic of typhoid-fever which had lately prevailed at Cincinnati.

There being no further business, the Board adjourned.

Attest:

C. O. PROBST, *Secretary*.

PROCEEDINGS OF THE JANUARY MEETING.

COLUMBUS, OHIO, *January 18, 1888.*

The meeting was called to order by the President, Dr. John D. Jones.

Present: Dr. Wise, Dr. Beckwith, Dr. Hoover, Dr. Sharp, Dr. Cretcher, Prof. E. T. Nelson and Attorney-General Watson.

The minutes of the last meeting were read and approved.

The Secretary presented his quarterly report, and recommended the purchase of books for the library. The report was accepted, and the Secretary instructed to prepare a list of books wanted for the library and present it at the next session.

Dr. Beckwith reported that immigrants arriving at Cleveland from New York quarantine had been quarantined and their effects disinfected.

Dr. Jones reported that he had secured samples of water from the Ohio river at Cincinnati as requested, and that the analysis made by Prof. Howard showed the water to be exceedingly bad.

Prof. Nelson and the Secretary were appointed a committee to select papers from those presented at the Sanitary Convention to be held at Akron, for publication in the annual report of the Board.

Dr. Jones, chairman of the Legislative committee, presented a report and bill drafted by the committee.

On motion, the report was received, and the bill taken up for discussion.

The bill, as read, was finally adopted, and the Legislative committee instructed to secure its introduction.

On motion of Prof. Nelson, the Secretary was instructed to present the following question to the Attorney-General for an opinion: Is the mayor a member of the board of health and entitled to a vote on questions coming before the board.

Prof. Nelson stated, in explanation of his motion, that a judge and

member of the Delaware Board of Health, had claimed that the mayor was not a member, and, consequently, three members of the board and the mayor would not constitute a quorum for the transaction of business.

A communication was read from the Louisville Board of Health in regard to legislation for abolishing intramural grave-yards. The communication was referred to the Legislative committee.

The Secretary requested that some action be taken in regard to the purchase of books for the library, and on motion of Prof. Nelson, the Executive committee and the Secretary were authorized to purchase books, the amount expended not to exceed one hundred dollars.

Dr. Beckwith presented a communication from Dr. Ashmun, health officer of Cleveland, requesting the Board to consider the advisability of asking for legislation empowering local boards of health and health officers to condemn and cause to be abandoned, wells proved unfit for use; also, to prevent the occupancy of buildings judged by the local boards of health or health officers to be unfit for human habitation.

The communication was referred to the Legislative committee.

Prof. Nelson was appointed a member of the Legislative committee, and assigned the chairmanship of the standing committee on Heating, Ventilation, Lighting and Hygiene of Schools.

Dr. Beckwith was added to the committee for the selection of papers presented at the Akron Sanitary Convention for publication in the annual report.

The Secretary, on motion, was authorized to purchase test-papers and ozone scales for ozone observations, to be distributed as he might deem advisable.

The Cincinnati Inspector of Buildings was introduced, and addressed the board on the subject of plumbing regulations in that city.

Prof. C. C. Howard, chemist of the Board, presented a report of an analysis of cheese sent from Akron, Ohio, which had caused the sickness of several persons.

The Secretary was instructed to purchase a library book and keep a record of all books taken out of the library.

There being no further business, the Board adjourned.

Attest:

C. O. PROBST, *Secretary.*

PROCEEDINGS OF JUNE MEETING.

COLUMBUS, OHIO, *June 20, 1888.*

The meeting was called to order at 9 A. M. by the Secretary, the President being absent in Europe.

Present: Dr. Wise, Dr. Hoover, Dr. Beckwith, Dr. Sharp and Prof. Nelson.

On motion Dr. Wise was elected President pro tem.

The minutes of the last meeting were read and approved.

The Secretary presented his quarterly report, with recommendations for the Board's consideration.

The advisability was discussed of asking the legislature to amend the act for establishing boards of health by omitting the clause excluding villages of less than five hundred inhabitants, and also to change the presidency of local boards of health. No action was taken.

The question of holding another sanitary convention was discussed, Prof. Nelson suggesting Delaware as a good point.

On motion of Dr. Hoover, an amendment to the By-Laws was adopted, providing that the election of the President of the Board shall be by ballot.

The Secretary reported that 1,000 copies of the Monthly Sanitary Record had been found insufficient to supply the demand, and suggested that the edition be increased. On motion, it was voted to publish 2,000 copies each month.

The Secretary's action in providing for fresh vaccine virus to be supplied health officers and physicians for immediate use in outbreaks of small-pox, was endorsed by the Board.

Dr. Beckwith presented a letter from the Cleveland Board of Health relative to a nuisance arising from dredging the Ohio and Erie canal within the city limits.

The Secretary was instructed to submit the letter to the Attorney-General, with a request for an opinion as to the powers of the State Board of Health in abating the nuisance.

CHEESE POISONING.

Communications were read from Dr. H. P. Havens, of Urbana, reporting about sixty cases of cheese poisoning in that city; from Dr. Ben. S. Leonard, of West Liberty, reporting not less than forty cases at that point; from Dr. H. S. Preston, reporting ten or twelve cases at Mutual; from Dr. R. Harvey Reed, reporting about fifty cases at Mansfield; and from Drs. A. Rhu and A. W. Crane, reporting about fifty cases at Marion.

The Secretary was instructed to continue the investigation and prepare a report for publication in the Annual Report of the Board.

The circular on the Care and Management of Infants and Young Children was taken up for revision. A few changes were made, and the Secretary was instructed to have 5,000 copies printed.

The circular on Diphtheria was next read for revisal, and the Secretary was instructed to have blank number of copies printed.

The Secretary presented a circular on Disinfection and Disinfectants. This was referred to a special committee, which subsequently reported, recommending that the circular be printed as a supplement to the Sanitary Record.

A circular on Glanders, prepared by the Secretary, was read and referred to a committee, which reported subsequently, recommending the printing of the circular as a supplement to the Sanitary Record.

The Secretary stated that he had prepared a circular on the Prevention and Restriction of Whooping Cough and Measles; but was inclined to the opinion that such a circular would perhaps weaken the effect of the circulars on Scarlet Fever and Diphtheria. It was decided for the present not to issue this circular.

On motion, the Secretary was authorized to make a complete sanitary survey of the Ohio River, and prepare a report to be presented to the Board.

The election of President being announced, a vote by ballot was taken, resulting in the election of Dr. S. P. Wise, of Millersburgh. Dr. Wise expressed his appreciation of the honor conferred upon him, and stated that his inaugural address would be presented at the time of taking his seat in the following September.

There being no further business, the board adjourned.

Attest:

C. O. PROBST, *Secretary.*

PROCEEDINGS OF THE OCTOBER MEETING.

COLUMBUS, OHIO, *October 10, 1888.*

The Board met in its office in Columbus, and was called to order by the President, Dr. Jones, at 7:30 P. M.

Present: Dr. Wise, Dr. Hoover, Dr. Sharp, Dr. Cretcher and Prof. Nelson.

A telegram was read from Dr. Beckwith, announcing that it would be impossible for him to attend the meeting.

The minutes of the last meeting were read and approved.

Under reports of standing committees, Dr. Cretcher presented an itemized statement of expenditures from November 1, 1887, to October 10, 1888.

The Secretary read a report, made by Dr. Hoover and himself, of an investigation of cheese poisoning and cheese factories. The report was accepted and approved.

Prof. Nelson was called to the chair, and Dr. Jones made a retiring address. Dr. Wise was escorted to the chair and read an inaugural address.

The Secretary presented his quarterly report, including a list of local boards of health organized under the amended law.

A vote of thanks was extended to the President and Secretary for the faithful performance of their duties during the year.

The Secretary read a report of his investigation of typhoid-fever at Caldwell, and of small-pox at Stringtown, Ohio. The report was received and ordered filed for publication.

Prof. Nelson stated that several cases of diphtheria were present at Delaware, Ohio, the disease, in one or two cases, having been traced to Radnor, Delaware county, where diphtheria was prevalent. He stated, also, that some twenty or thirty cases of typhoid-fever had been reported at Eden, a small village near Delaware.

Dr. Cretcher said he thought such extensive outbreaks should be investigated by the Board, affording, as they did, an excellent opportunity for public education. But while this should be done, it should be the policy of the Board to interest local authorities in the work and to teach the people to take care of themselves.

The President appointed Prof. Nelson and the Secretary a committee to investigate the outbreak of typhoid-fever at Eden.

Dr. Jones presented a report on "Quarantine," being a report of a committee, consisting of Dr. Lee, of Pennsylvania, and himself, appointed by the National Conference of State Boards of Health.

Mr. Cretcher, mayor of Greenwich, asked leave to address the Board, and spoke of some of the difficulties they had met with in organizing a board of health in that place.

The Secretary presented a report prepared by Dr. J. T. Mills, of Jersey, Ohio, of cases of trichinosis. The report was accepted with thanks, and the Secretary authorized to use such parts of it for publication in the Board's report as were deemed suitable.

The Secretary presented an outline of the matter intended for the annual report, including a draft of a letter to health officers, with a list of questions to be answered. It was voted to devote one number of the Monthly Sanitary Record to a *resume* of work done at the Secretary's office during the year.

Prof. Nelson stated that he was much interested in the subject of physical measurements, and had, in his connection with the college at Delaware, excellent opportunities for studying the subject.

Prof. Nelson was requested to correspond with Harvard college and

other places where such work was being done, with a view of ascertaining the cost of instruments required.

The President introduced the subject of standing committees, and asked the opinion of members as to the advisability of changing or abolishing them.

After some discussion, pro and con, it was decided to allow the standing committees to remain unchanged.

The President announced that the executive committee for the year would consist of the following members, to-wit: Dr. Hoover, Dr. Cretcher and Prof. Nelson.

A Legislative committee was also appointed, Prof. Nelson, Dr. Sharp and Dr. Hoover being named as its members.

Prof. Nelson spoke of a water supply for Delaware, which was about to be accepted by the city without any definite knowledge of its quality or quantity.

The Secretary was authorized to subscribe for such journals for the office as he might deem proper. Communications were read from the Association of General Baggage Agents, and from the Secretary of the Ohio Funeral Directors' Association, in regard to the transportation of dead bodies.

Prof. Nelson gave notice that he would offer an amendment, at the next meeting, to the rules for holding sanitary conventions.

There being no further business, the Board adjourned to meet in January, 1889.

Attest:

C. O. PROBST, *Secretary.*

WORK AT THE OFFICE OF THE BOARD.

The work at the Secretary's office may be conveniently considered as heretofore, under the collection and dissemination of information; in addition considerable space has been devoted to the correspondence of the office. Under the head of Special Investigations are given reports of investigations made during the year by members of the Board and the Secretary.

COLLECTION OF INFORMATION.

WEEKLY HEALTH REPORTS.

Reports from physicians, of prevailing diseases, have been received regularly each week during the year.

The entire number of reports received during the year ending October 31, 1888, was 3,260, an average of 63 reports a week. During the previous year, 3,797 reports were received.

We regret that a larger showing cannot be made, and feel that the importance of this work is generally underestimated.

As we are now in the third year of such collections, we can compare the corresponding months of the years 1887 and 1888. Such comparisons are now given in the Monthly Sanitary Record, and are not only interesting as showing the months in which certain diseases are most prevalent, but will eventually prove of use in studying the causes in operation productive of these diseases.

REPORTS OF INFECTIOUS DISEASES FROM BOARDS OF HEALTH.

As infectious diseases, as a rule, are preventable diseases, we have constantly endeavored to gain information of their location. Such knowledge must of necessity be had before any steps toward prevention can be taken.

The policy of the Board is to secure a local board of health in every town and village in the State, and to have such boards require reports from physicians of all dangerous communicable diseases coming under

their professional attention, weekly reports of these diseases to be reported by local boards to the State Board.

The following circular-letter and postal blank accordingly were sent to health officers and local boards of health:

OHIO STATE BOARD OF HEALTH,

SECRETARY'S OFFICE, *Columbus, Ohio.*

To the Health Officer:

DEAR SIR.: The law makes it the duty of the health officers of all local boards of health in the State "to report to the State Board of Health promptly, on discovery thereof, all cases of Asiatic cholera, yellow-fever, small-pox, scarlet-fever, diphtheria, typhus-fever and typhoid-fever, and such other contagious or infectious diseases as the State Board of Health may from time to time specify."

We hope to receive from you weekly reports of all cases of contagious or infectious diseases reported to you or to your board, and also monthly reports of all deaths occurring within your jurisdiction. Postal-blanks will be furnished for this purpose.

We consider it absolutely essential to the successful working of local boards of health that physicians or householders shall be required to report all cases of dangerous communicable diseases; and it is, perhaps, not less important that a complete record of deaths should be kept by the board. This has been fully outlined in the "Rules and Regulations" recommended for the adoption of local boards of health, a copy of which was sent you.

We most earnestly request that this matter be brought before your board at an early date, and, if such regulations are not enforced, that the necessary action be taken without delay.

You will find enclosed a postal-blank, which we ask you to please fill out and return to this office at your earliest convenience.

Trusting we may receive reports from you regularly, I am,

Very respectfully yours,

C. O. PROBST, M. D., *Secretary.*

....., OHIO,

....., 1888.

1. What diseases does the board of health require to be reported?

.....

2. Is such a requirement enforced?

.....

3. Do you make a collection of deaths and their causes?

.....

4. If so, by what method?

.....

.....

....., *Health Officer.*

The following places report that the rule of the board of health requires reports of infectious diseases, and that such requirement is enforced:

Akron, Ansonia, Bellaire, Cambridge, Cincinnati, Cleveland, Collinwood, Columbus, Conneaut, Dayton, Delaware, East Liverpool, Flushing, Forest, Galion, Gallipolis, Greenville, Hamilton, Hudson, Huron, Jamestown, Kent, Leetonia Lebanon, Logan, Massillon, Mechanicsburg, Miamisburg, Minster, Mt. Vernon, New Carlisle, New Lisbon, New Richmond, Norwalk, Shelby, Toledo, Urbana, Warren, West Cleveland, White House, Xenia, Youngstown.

Collections of deaths and their causes are also made in all of these places with the exception of Cambridge, Kent, Leetonia, Massillon, New Lisbon, New Richmond and Norwalk.

To secure reports of infectious diseases a letter was addressed to health officers requesting weekly reports, and copies of the following postal-blank were furnished them:

OFFICE OF THE BOARD OF HEALTH.

The following INFECTIOUS DISEASES have been reported for the week ending Friday, 188....

Diphtheria .....	.....	Cases.	Deaths.
Scarlet-Fever.....	.....	" .....	" .....
Typhoid-Fever .....	.....	" .....	" .....
Whooping Cough, .....	.....	" .....	" .....
Measles.....	.....	" .....	" .....
.....	"	"
.....	"	"

..... Health Officer.

The list of boards furnishing such reports is yet small, but as the work is new to most of them we may expect better results in the future.

MONTHLY MORTALITY REPORTS.

We have continued the collection of deaths and their causes, and have greatly extended the list of towns furnishing such reports.

The towns which reported October, 1888, were as follows :

Name of place.	Population.	Authority.
Akron.....	30,000	Dr. L. S. Ebright, H. O.
Alliance.....	7,000	Dr. James Bates, H. O.
Ansonia.....	850	Dr. H. A. Snorf, H. O.
Ashtabula.....	6,500	Dr. A. W. Hopkins, H. O.
Ashley.....	800	Dr. H. N. Coomer, H. O.
Bellaire.....	12,000	Dr. J. Park West, H. O.
Belle Center.....	800	Dr. S. J. Pollock, H. O.
Bellevue.....	3,500	John Earls, H. O.
Bluffton.....	1,500	Dr. J. R. Clark, H. O.
Camden.....	1,100	Dr. W. W. Canny, H. O.
Canton.....	25,000	Dr. S. A. Conklin, Registrar.
Chagrin Falls.....	1,400	B. S. Baster, H. O.
Chillicothe.....	14,000	Dr. T. S. Barnes, H. O.
Cincinnati.....	325,000	Dr. Byron Stanton, H. O.
Cleveland.....	235,000	Dr. G. C. Ashmun, H. O.
Clyde.....	3,000	Alex. Harnden, H. O.
Columbus.....	102,000	Dr. F. Gunsaulus, H. O.
Conneaut.....	1,500	Dr. E. D. Merriam, H. O.
Cuyahoga Falls.....	2,800	Dr. W. Hough, H. O.
Dayton.....	60,000	Dr. J. M. Weaver, H. O.
Defiance.....	7,000	S. J. Haller, Sec'y.
Delaware.....	9,000	Dr. Jas. M. Cherry, H. O.
East Liverpool.....	10,000	Wm. Gibbs, H. O.
East Palestine.....	1,600	Dr. A. L. LeCester, H. O.
Forest.....	1,300	Dr. W. N. Mundy, H. O.
Galion.....	6,000	Dr. Webb J. Kelly, H. O.
Gallipolis.....	5,000	Dr. E. Westlake, H. O.
Hamilton.....	20,000	Dr. J. M. Parks, H. O.
Hudson.....	1,700	Dr. F. Hodge, H. O.
Kent.....	3,750	O. Newberry, H. O.
Logan.....	3,700	Dr. I. C. Wright, H. O.
McComb.....	1,400	Dr. Jno. A. Thompson, H. O.
Mansfield.....	15,000	Dr. R. Harvey Reed, H. O.
Marion.....	8,000	J. K. Reed, H. O.
Mechanicsburgh.....	2,000	Dr. O. A. Nincehelter, H. O.
Miamisburg.....	3,000	Dr. W. S. Bookwalter.
Minster.....	1,500	Dr. R. A. Rulmann, H. O.
Middletown.....	8,200	Dr. John T. Sutphen, H. O.
Mt. Vernon.....	6,000	Dr. E. R. Eggleston, H. O.
Nelsonville.....	5,000	Dr. Chas. W. Cable, H. O.
New Carlisle.....	1,600	Dr. H. H. Young, H. O.
New London.....	1,100	J. F. Allen, H. O.
North Amherst.....	1,600	Dr. N. H. Cornwell, H. O.
Oberlin.....	4,000	Thomas R. Mayhew, H. O.
Plymouth.....	1,500	Dr. W. H. Sykes, H. O.
Portsmouth.....	14,000	Dr. J. P. Bing, H. O.
Ravenna.....	4,000	T. R. Mason, H. O.
St. Mary's.....	2,500	Dr. W. E. Schoonover, H. O.
Shawnee.....	4,000	Dr. C. E. Whittington.
Springboro.....	500	David Mering, H. O.
Toledo.....	80,000	Dr. G. A. Collamore, H. O.
Versailles.....	1,900	Dr. Wm. H. Rike, H. O.
Wadsworth.....	2,500	H. H. Bricker, H. O.
Wapakoneta.....	3,300	Dr. R. B. Anderson, H. O.

Name of place.	Population.	Authority.
Warren	8,000	Dr. S. H. Smith, H. O.
Washington C. H.	5,200	J. N. Edwards, H. O.
Waverly	1,600	Dr. Austin Hutt.
Wellston	5,000	F. Z. Wells, Clerk.
Winchester	1,000	Dr. W. A. McClain, H. O.
Xenia	10,000	Dr. A. L. Dryden, H. O.
Youngstown	24,300	Dr. W. L. Buechner, H. O.
Total population	1,110,500	

These reports, it is true, are very incomplete, representing little more than one-fourth of the population of the State, but, so far as they go, are much more accurate than the death statistics collected by assessors.

We trust our registration laws will be so amended that we can secure complete death returns for the entire State.

We have given, on another page, an abstract of the deaths and causes in twenty-six cities and towns which have furnished us complete reports for the past year.

OBSERVATIONS FOR OZONE.

A circular letter to the observers of the Ohio Meteorological Bureau, requesting observations for ozone, was furnished Prof. Benj. Thomas, director of the bureau, who very kindly sent the letter, with one from himself, to each observer. The following list of observers are now sending in reports regularly each month :

Mrs. E. D. L. Boyer.....	Dayton.
Chas. G. Katzenberger.....	Greenville.
W. F. McDaniel.....	Celina.
Thomas Mikesell.....	Wauseon.
E. T. M. Milliams.....	Clarksville.
Chas. W. Rice.....	Yellow Springs.
H. D. Gowey.....	North Lewisburg.
J. W. Byram.....	Toledo.
D. B. Cotton, M. D.....	Portsmouth.
Thos. W. Gordon, M. D.....	Georgetown.
James Little, M. D.....	Logan.
W. K. Cowdon	Quaker City.
A. G. Frost	Youngstown.
O. N. Stoddard, M. D.....	Wooster.
James Bull.....	Hanging Rock.
Prof. L. H. McFadden.....	Westerville.
B. F. Hough.....	Sandusky.
A. Billhardt, M. D.....	Upper Sandusky.
Eugene Ransom (Buchtel College)	Akron.

To these this letter was sent, accompanied with test-papers, ozone scales and blanks for recording results :

OHIO STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY,

COLUMBUS, OHIO, *March 22, 1888.**To the Observers of the Ohio Meteorological Bureau :*

GENTLEMEN: We send you to-day a supply of test-papers, with ozone scale, for taking observations for ozone.

It is thought desirable to adopt the same method of testing for ozone as has been used in Michigan for a number of years, as we will thus be able to make a direct comparison with observations made in that State. For this reason we have been at some pains to secure paper of the same quality, and to have it prepared in the same manner and by the same person, Prof. John H. Long, of Chicago.

Two observations are taken daily, a "Day Observation" from 7 A. M. to 2 P. M., and a "Night Observation" from 9 P. M. to 7 A. M. It is highly desirable that observations made in Ohio should be for the same periods of time.

We quote here the directions given to observers in Michigan, and respectfully request that they be strictly observed:

"Take a strip of the paper, one-half inch wide and four inches long, moisten one-third of the paper in pure water, and pin it up in a place screened from direct sunlight, but freely exposed to the air and diffuse daylight. An ordinary spring clothes-pin, properly fastened in position, is a convenient article to hold the test-paper during the exposure. After exposure for the time stated above, dip the paper in clear water, immediately compare it with the ozone scale, and enter in the proper column the figure on that portion of the scale which most nearly corresponds in color with the test-paper used.

"In deciding the amount of ozone for any observation by comparison of the test-paper with the ozone scale, the general tone of the test-paper should be taken, and not the exceptional marks or line due to scratching the surface of the paper. When, as will occasionally happen, exposure of the paper reveals the fact of uneven spreading of the test-material, shown by alternate streaks of color and absence of color, an attempt should be made to record such average of the whole as would probably have been shown if the starch mixture had been evenly spread. The observation should be made and recorded from the side of the paper most darkly colored, whether front or back."

The exposed paper should be protected from the action of sulphurous-acid gas, which is formed abundantly by the burning of coal, as this agent will bleach it after it has been colored by exposure.

The supply of papers sent you should be carefully protected from light and moisture, which can best be done by keeping them in closed bottles or jars, in a dark, dry closet.

When more test-papers are needed, please notify this office in time to furnish them, so that no interruption may occur in the observations.

We send blanks for recording observations, which you will please return with your regular reports to the Ohio Meteorological Bureau.

Tables for ozone will be published in The Monthly Sanitary Record, in connection with the "monthly summary" furnished by the Ohio Meteorological Bureau. A copy of the Record will be sent regularly to all observers.

Any additional information wanted will be gladly furnished.

Very respectfully,

C. O. PROBST, M. D., *Secretary.*

REPORTS FROM LOCAL BOARDS OF HEALTH.

At the close of the year the following circular-letter and list of questions was sent to the health officers and boards of health of the State :

OHIO STATE BOARD OF HEALTH, SECRETARY'S OFFICE,
COLUMBUS, OHIO, *October 31, 1888.*

To the Health Officer :

DEAR SIR: We desire to collect information in regard to the amount and kind of sanitary work executed by local boards of health, during the year ending October 31, 1888, or when of later date, since the organization of such boards.

The reports received will be published in our next annual report, over the signatures of their respective authors, and will afford, it is believed, a valuable index of the sanitary achievements of our local boards of health, and will also prove useful to health officers through the exchange of experiences in the enforcement of measures for the preservation of the public health.

Will you kindly forward before the end of November answers to the enclosed questions.

These questions are merely to outline the nature of the information desired and your answers need not be strictly confined thereto.

The questions should be answered by numbers and need not be repeated.

If your board has been established within the year, please note the date of its organization.

Trusting to receive your report promptly, I am

Very respectfully,

C. O. PROBST, M. D., *Secretary.*

1. State, in a general way, the amount and character of work done by your board of health during the past year.

2. Can you give approximately the amount expended in that time for sanitary purposes, exclusive of street improvements and street cleaning?

3. What salary is paid to the health officer?

4. Has the amount of sickness in your city (or village) been greater, less or about the same as in previous years?

5. If any disease has prevailed epidemically, please give a history of the same.

6. To what extent have infectious diseases been present.

7. Please state specifically the measures that are taken by your board to restrict such diseases.

(a) Is notification of infectious diseases received, and are houses placarded? (b) How are children from infected houses kept from school and other public places? (c) What precautions are used in re-admitting patients to school? (d) Does the board superintend disinfection in private houses? (e) Is there a pest-house, and is it kept ready for use? Please state what is *actually* done and not what could or should be done.

8. The enforcement of what rules or regulations of the board has met with the greatest obstacle.

9. Is there a manifest growth of interest among your citizens in matters of sanitary reform?

10. What, in your opinion, are the greatest sanitary evils of your town?

11. Please give your name, town and county.

In response to this letter, the following answers were received :

ADA.—Pop., 2,300.—W. H. MORROW, *Clerk.*

2. None.

3. None.

4. Less.

5. None.

7. Quarantine.

- (a) Yes.
- (c) Disinfection.
- (d) Yes.
- (e) No.
- 9. Yes.
- 10. Filth.

AKRON.—Pop., 30,000.—DR. L. S. EBRIGHT, H. O.

- 1. Nearly 6,000 nuisances abated.
- 2. About \$1,200 annually.
- 3. \$400 per annum.
- 4. Less.
- 5. Measles.
- 6. Measles ; 600 cases.
- (a) Yes.
- (b) By notification to superintendent.
- (d) Sanitary police.
- 8. Keeping of hogs in the corporation.
- 9. Yes.
- 10. Lack of proper and sufficient sewerage and want of care in disposing of garbage.

ALLIANCE.—Pop., 7,500.—DR. JAMES BATES, H. O.

When Alliance put on the garb and name of a city in April, 1888, Mt. Union—a village of 1,000 inhabitants, and containing the famous M. E. Mt. Union College,—was added to the 6,000 odd inhabitants of the town proper, making between 7,000 and 8,000 of a population; nearer 8,000 than 7,000. About this time the then existing board of health was reorganized by the city council, some of the old members being reappointed, and new ones added. The board organized by electing Chas. Chapman, ex-officio, president, Alex. Lamott, secretary, James Bates, M. D., health officer, and Joseph Oyster, scavenger. The secretary to receive \$50.00 per year, in quarterly payments; the health officer \$150.00 annually, paid in the same manner; the scavenger to remove all "night soil" in day-light, in air-tight vehicles, at a uniform rate of 65 cents per bbl., being held in \$250.00 bond for the faithful performance of such duty. There being no present available fund to place at the disposal of the board of health, the city council agreed to pay all debts contracted by it, when properly certified. Outside of salaries, the expenses of the board have been light, not exceeding \$100.00 since its organization.

During the last year, although no dangerous epidemics have prevailed, there has been a notable increase in deaths over former years. Particularly during the month of August, when the mortality reached twenty, resulting from a variety of diseases. This is partly owing to a very imperfect record being kept in former years. There has been a marked fatality among children during the summer months with abdominal troubles, and, during the colder months, of croupous difficulties. With the exception of whooping-cough and mumps, the city has been remarkably free from infectious diseases. The board directed its health officer to take such measures as, in his judgment, seemed best to prevent the spread of infectious diseases. The health officer, therefore, notified all practicing physicians by letter, and all householders through the newspapers, to report

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

immediately any infectious disease of a dangerous character coming within their knowledge, the mayor kindly placing the city police at his disposal to enforce such order. The health officer offered his services, free of charge, to the board of education, to instruct the teachers in diagnosing dangerous diseases, arguing that the teacher, seeing the child before a physician was called, could, in many cases, prevent contagion by prompt action. But the educational board, by advice of the school superintendent, refused to entertain such proposition. Had such offer been received favorably, much danger could have been averted.

There is now no pest-house in existence. Scholars supposed to have infectious diseases, or suffering from the same, are, through a notice to the superintendent, ordered home, only to return by permit from the board of health. During his enforced absence from school, he cannot mix with others in any public manner. The board has the greatest difficulty in enforcing its rules with regard both to physicians and school authorities, both parties treating notices from the board of health as officious innovations.

The rule requiring reports of deaths, births, and contagious diseases, has met with universal opposition from physicians. And the rule requiring undertakers to secure permits to bury was only enforced completely when a notice was sent to the cemetery trustees requiring them to give permits to undertakers only after receiving authority from the board of health.

During the year the citizens have aroused somewhat from their former apathy, and the coming year bids fair to be one of unexampled co-operation in sanitary work.

The city needs a sewerage system, more careful supervision of the disposal of refuse matter, more rigid laws (enforced) with regard to the erection of water-closets.

ANSONIA.—Pop., 850.—DR. H. A. SNORF, H. O.

1. Very little yet, as the organization has just been completed.
2. No.
3. \$24.00 per annum.
4. Less.
5. Measles was very bad. Scarlet-fever prevailed, but mild. Whooping-cough mild.
6. Measles extended far and near—other diseases were milder.
7. (a) Houses are placarded. (b) By order of health officer. (c) They are not readmitted until attending physician notifies health officer, and he the superintendent. (d) Yes. (e) No. (f) Our board has had no experience yet, but should epidemics prevail cases are to be isolated and remain so until ordered by health officer.
8. Constructing privy-vaults or wooden receptacles.
9. No.
10. Privy-vaults.

ANTWERP.—Pop., 1,500.—DR. B. E. MILLER, H. O.

The Board of Health in our village is a "dead letter." It was organized August 9, 1888, and never had a meeting since its organization to the present time. Rules and regulations were adopted, the secretary was voted a salary of \$12.00 per year for his labor. No printed matter or blanks were furnished the health officer, and no births or deaths or infectious diseases are reported to the board.

The reason for not meeting is, perhaps, principally due to our President being sick nearly all the time. No infectious diseases present, and a lack of interest among our people toward sanitary work, hence—

1. Nothing has been done so far.
2. Nothing has been expended for sanitary purposes.

3. No salary is paid health officer.
4. The amount of sickness has been less than in previous years.
5. No disease has prevailed epidemically.
6. No infectious disease present only, in a very limited extent, in one family.
7. No measures were taken by the board to restrict the same.
8. The Board has not tried to enforce any rules.
9. With few exceptions there is no manifest interest whatever among our citizens in matters of sanitary reform.

10. The greatest sanitary evils of our town are filthy back streets and alleys, filthy privies and pig-sties. We inhale the delicious odors from a hundred privies, overflowing with filth on every damp and rainy day. We also have bad water for culinary purposes; nearly all depend upon cistern water, with cisterns imperfectly made, either brick and cement or a pine tub without any filter. And last, the close proximity of our town to a large State reservoir that is now abandoned, and yet imperfectly drained, which breeds its annual crop of malaria and fevers.

ARCHIBALD.—Pop., 900.—J. R. HOFFMIER, H. O.

1. The work done for the past year has consisted of keeping privy vaults clean and well lined; also pig-pens clean. No cesspools have been allowed; no refuse matter has been allowed to be thrown in any of the streets or alleys, or upon the surface of the ground where decomposition could in any way be injurious to health. In July, I had printed copies of the resolutions passed by our board in June of this year, and a copy left at every house in the village. I herewith enclose a copy of same.

2. The amount expended by our board has not exceeded \$25 for street cleaning and other sanitary work.

3. Health officer receives a salary of \$60 per year.

4. There has been less sickness for the past year.

5. No disease prevailed epidemically, in the past year.

6. We have had but two cases of infectious diseases in the village, and they were typhoid in a mild form.

7. The measures taken by our board are to see that the evacuations of the patient are promptly buried, and the room in which the patient lies is kept clean; disinfectants used in washing the soiled clothes; as few people allowed to visit the patient as possible. We do not have a pest-house, nor have we had any occasion to prohibit non-attendance at the schools since the organization of this board. The health officer sees to the disinfection in private houses.

8. No one in particular; all have to be closely watched to see that they are complied with.

9. There seems to be a growth of interest, as I notice any violations of the sanitary ordinances or resolutions are promptly reported to me, which seems to indicate there is more of an interest taken in the matter of sanitary reform.

10. The imperfect manner in which privy vaults have been put in and surface water wells.

P. S. I have had all public wells walled up a distance of ten feet with water-lime mortar, and plastered the same distance.

ASHLEY.—Pop., 800.—DR. H. N. COOMER, H. O.

The Ashley Board of Health was organized June 12, 1888, H. N. Coomer, health officer, J. C. Eckels, clerk.

1. The Board had no conception of the work to be done, made no estimate of probable expenses, and did not even make provision to pay for the necessary blanks for the use of the health officer.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

2. Cannot say that any amount has been expended for sanitary purposes, exclusive of street cleaning.

3. Up to this date the Board of Health has been *careful* not to mention the health officer's salary. At the last meeting of the council a bill of \$25 was presented for payment, for services "in part," as health officer. The council referred the matter back to the Board of Health for approval. It is not known what action will be had in the matter.

4. Decidedly less than in previous years.

5. Typhoid-fever (of a doubtful character) to a very limited extent.

6. Measles through the months of June and July, and mumps since September 1.

7. None, except those which devolve upon the health officer. During the prevalence of measles there was a vacation of our schools, but no houses were placarded.

8. In reference to the sale of *juvenile* meats.

9. There is, and citizens cheerfully comply with the requirements of the notices served upon them.

10. Inattention to surface filth of various kinds.

ASHTABULA.—Pop., 6,500.—DR. A. W. HOPKINS, H. O.

1. Thorough sanitary inspection of the village has been kept up for the entire year, and the board feels well pleased with the work done. Our scavengers have kept the garbage and night-soil removed at the expense of the property owners. The board made a rule, and have enforced it the past season, "that no hog or hogs shall be kept within 150 feet of any building used as a dwelling."

2. \$370.00. This amount paid our sanitary policeman, health officer, printing, etc.

3. \$100.00 per year, which is too small, by far.

4. About the same as in previous years.

5. There has been none.

6. Not to any great degree. Have had a number of cases of diphtheria, with but few deaths, compared to the number of cases reported. A few cases of scarlet-fever, with three or four deaths. German measles was quite prevalent last spring, and a few cases of measles, with no deaths. Typhoid-fever has prevailed quite extensively this fall, but has been of a mild type, generally.

7. Notification is given and houses placarded. Parents are notified to keep children from infected houses from school, and teachers and superintendents of schools notified not to permit such children to attend until a certificate is furnished them by the attending physician that it is safe for them to attend. The board has not superintended disinfection in private houses. There is a pest-house, which is kept ready for use.

8. The removal of hogs and hog-pens.

9. Yes.

10. The lack of proper sewerage. Not more than eight out of every ten of the wells in town will stand a test for sewerage contamination. We have water-works in the course of construction, which take their water supply from the shore of Lake Erie from filter galleries in the sand, which will furnish us fair water.

ATTICA.—Pop., 1,000.—DR. A. W. KNIGHT, H. O.

The Board of Health has been in existence for about eight years, and this being a comparatively healthy locality, but little work is needed to keep every thing in good sanitary condition.

1. All drains, slaughter houses, privies, etc., have been inspected and disinfected twice during the years of 1887-8.

2. Probably \$50.00. Village population, 1,000.

3. \$10.00.
 4. About the same.
 5. No epidemics of any kind.
 6. We have had a good many cases of measles and typhoid-fever in 1877-8, but neither have been epidemic in character.
 7. Isolation and disinfection are the means adopted.
- Infectious cases are left wholly in the care of the attending physician, who makes his diagnosis and announces it to the friends, who are warned (and they obey) to isolate patient and disinfect his surroundings. These cases are all kept out of school and not readmitted until after complete recovery and thorough bathing. Board does not superintend disinfection in private houses; the attending physician sees to that.
8. All rules, or rather demands, of the health officer, are strictly enforced by the council of the village.
 9. No.
 10. We have no special sanitary evils to contend with.

BAINBRIDGE.—Pop., 900.—DR. L. F. HOUSE, H. O.

1. No organization.
2. Not any.
3. Not settled yet.
4. Less.
5. Scarlet rash and measles.
6. A slight epidemic of the above.
7. None at present.
8. To get an organization.
9. Not any.
10. Throwing all refuse in streets and alleys.

BEDFORD.—Pop., 1,025.—J. T. MATHEW, H. O.

1. Board reorganized May 18, 1888. Cleaning of water-closets, slop drains, testing well water and renovating cellars.
2. Two hundred and fifty dollars.
3. Fifteen dollars to thirty dollars per month.
4. Since fall rains, more typhoid-fever than in previous years.
5. None.
6. Scarlet-fever, measles, mumps, typhoid-fever and diphtheria; of the latter one case was fatal. Measles quite extensively through the school.
7. Health officer immediately notified of infectious disease, and houses are at once placarded. Notification of infectious disease is at once served upon superintendent of schools, excluding children of family from the schools.
7. After house is thoroughly disinfected, notice of readmission to school is served upon superintendent of the same. No pest-house.
8. Quarantine.
9. There is.
10. Filthy water-closets, poor drainage and want of knowledge by the people of the importance of sanitary reform.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

BELLAIRE.—Pop., 12,000.—DR. J. PARK WEST, H. O.

1. The greater part of the work of our board of health is done from April to September, inclusive. A sanitary policeman is employed who makes a semi-weekly tour of inspection of the city. Any thing detrimental to health is reported to the health officer, who issues an order for its abatement. Frequently both officers make these tours together and give verbal orders and directions for cleaning up. About 350 orders were issued the past summer, not including orders to clean over forty vaults. Only one of these orders was disregarded; it was enforced by the mayor's court. For the remainder of the year the work consists in collecting the statistics of deaths, looking to any infectious diseases reported, and their surroundings, and to any complaints made to the board.

2. None but what is paid to the officers of the board, except what was expended by private individuals.

3. Health officer, \$200.00. Sanitary policeman, \$150.00, *i. e.*, \$25.00 a month for the six months.

4. The amount of sickness has been much less.

5. None.

6. To a very slight extent. Quite a number of cases of whooping-cough. A few cases (not more than fifteen) of measles, and three or four cases each of scarlatina and diphtheria. One case died from catarrhal pneumonia following measles.

7. Notification of infectious diseases required. No placarding. Generally understood no one from house where a case of such disease prevails is allowed to attend school. Superintendent and teachers very careful. In case of doubt school board requires a certificate from health officer. Board does not superintend disinfection. No pest-house.

8. The disposal of garbage. Too often thrown into alleys or public highways, or allowed to accumulate too long.

9. Yes, to a moderate extent. This is shown in part by the readiness with which orders issued by the board are carried out.

10. The lack of two more good sewers. A great cry has always been raised about the pollution of our water supply by the towns above us. This, in my opinion, is more imagination than fact.

BELLE CENTRE.—Pop., 800.—DR. S. J. POLLOCK, H. O.

1. We have issued seventy-five notices to abate nuisances (which have pretty generally been obeyed), and four burial permits, and have prosecuted two butchers for disposing of bad beef.

2. There has been no money expended for sanitary purposes.

3. The salary of health officer has not been fixed.

4. The amount of sickness has been about the same as in previous years.

5. No disease has prevailed epidemically.

6. No infectious disease has prevailed.

7. I place, or cause to be placed, a card, in large letters, on the house, stating the nature of the disease, and notify the superintendent of schools. I notify the superintendent when children may be readmitted. The doctors attending infectious diseases notify me. The board does not superintend the disinfecting of private houses; the doctor attends to that. We have no pest-house.

8. Removals of privies and hog-pens, and obeying to the letter, the notification of the removal of all nuisances, have met with the most resistance.

9. Our citizens generally are interested in sanitary reform.

10. Removal and cleansing of privies and hog-pens and allowing heavy growth of weeds, with consequent vegetable decomposition.

BELLEFONTAINE.—Pop., 5,000.

C. O. PROBST:

Dear Sir: The health officer handed me your card this morning. We have no good way of gathering reliable information as to the sickness of our neighborhood. Flying reports will not do to base a statement on for a report for "health boards." Statements furnished such boards should be positive, and not guess-work. I do not now know of a single case of scarlet-fever, diphtheria or typhoid-fever in the neighborhood. There has, I understand, been one death from diphtheria, but this was some two or three weeks since. There have been a number of cases of catarrhal pneumonia, sore-throat, intermittent fever, etc., but how many, I could not tell. I have heard of some scarlet-fever, but have not seen any, and have not heard of it so that it could be relied upon.

Respectfully,

C. W. HEFFNER, M. D.

BELLEVUE.—Pop., 3,500.—JOHN EARLS, H. O.

2. No money has been spent by the board, except clerk and health officer's salaries.
3. Fifty dollars per annum.
4. Less.
5. We have had no epidemic disease, except whooping-cough.
6. Very little.
7. Persons are notified by the health officer to keep their places clean.
- (a) No.
- (b) Parents notified by the health officer.
- (d) No.
- (e) No.
9. No.
10. Want of severage.

BLOOMINGBURG.—Pop., 800.—DR. H. R. STITT, H. O.

The following are the answers in regard to the condition of our Board of Health:

1. Our board was only organized September last, and we have done very little work as yet. We have had the streets and alleys cleaned and several privies put in good sanitary condition.
2. There has been no money spent for sanitary purposes, to my knowledge.
3. Receives no stated salary; is given so much for notices served and work done.
4. There has been more typhoid-fever than in other years, but otherwise, about the same.
5. There has been no epidemics.
6. There has been several cases of whooping-cough—at least twenty to twenty-five cases, and about fifty cases of typhoid-fever since last March—several of them of typho-malarial type.
7. Notifications of infectious diseases are received, but houses have not been placarded. When we receive notice of infectious disease we give the superintendent of public schools notice to exclude all children from that house; and upon a doctor's certificate that all danger is past, we give the superintendent notice to re-admit the children. We do not allow funerals of persons dying from infectious diseases to be held in churches. We have no pest-house here.
8. We have met with no particular obstacle in enforcing any of our rules.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of his Report.

9. No particular interest has been manifested by our citizens, not even by the Board of Health, in the matter of sanitary reform. We have hard work to get enough members together to hold a meeting; we have not been able to get a meeting to obtain the necessary blanks for the health officer's use.

10. We have very bad privy-vaults—scarcely any of them are walled at all—and very few of them are over three feet deep. In the summer time the smell is very offensive, and I believe a great many of our cases of fever are the result of this very thing.

BUCYRUS.—Pop., 6,000.—DR. C. H. NOBLET, H. O.

1. We organized August 16, 1888, and, as you will see, we have not had much time to work. We have had all the hog-pens and privies cleaned out, and all slops and rubbish removed out of the city and streets cleaned up. Our town is well drained. Our creamery was in a bad condition; they ran their slops through a four-inch tile. We ordered them to put in nine-inch tile and construct a flush of thirty barrels, and flush every twenty-four hours. After that we had no more trouble from that source.

2. For salaries to officers, and for cleaning streets, one hundred and fifty dollars, up to present date, as near as I can tell.

3. Health officer gets one hundred and fifty dollars per year.

4. Sickness in our city has been less, but it has not been a fair test.

5. There has been no disease epidemic so far. We have had a few cases of diphtheria of mild type.

6. Eight cases of diphtheria, but no deaths.

7. We have the attending physician report to health office all cases of contagious diseases as soon as he finds them. Then we send the superintendent of the schools notice not to admit any scholar from that family until we give him notice to return them. We have a card put on the house with the name of the disease. We order the attending physician to disinfect the house two days before we let the patient go out. We have no pest-house, for we have never needed one.

8. Hog-pens and slaughter-houses.

9. There is quite a marked interest taken by the citizens in our work.

10. Gases escaping from sewers, also water-closets, hog-pens, and decaying animal and vegetable-matter on the streets.

CAMBRIDGE.—Pop., 5,000.—DR. T. J. MILLER, H. O.

1. The Cambridge Board of Health was organized July 6, 1888, and it took a little time to get things into a working condition; consequently, aside from renovating a few of the worst hog-pens and privy-vaults, but little work was accomplished prior to November 1, 1888.

2. No money was expended prior to November 1, except for some printing that we found necessary to have done, and the health officer's salary.

3. We pay our health officer twenty dollars a month.

4. Perhaps a little less sickness this year than usual, and it is believed, by some at least, that the cleaning of some of the worst privy-vaults no doubt prevented some cases of typhoid-fever. Perhaps some infectious diseases were prevented from spreading by quarantine.

5. Measles was epidemic in the winter and spring of 1888, before the board was organized, and no precautions were taken to prevent the spread of the disease. Very few deaths occurred in this epidemic.

6. Aside from measles, only to a limited extent; a few cases of whooping-cough, diphtheria and scarlet-fever have occurred.

7. We require physicians to report all cases of infectious diseases (blanks having been furnished them for that purpose), and as soon thereafter as possible the health officer placards the house. The placard is as follows:

"NOTICE.—This house contains a case of Scarlet-Fever. When the danger from contagion has passed this card will be removed. By order of Board of Health. Any person removing this card without authority is liable to fine and imprisonment."

The superintendent of schools is at once notified that a certain person, who resides at a certain number and street, and who attends a certain grade, with a certain person teacher, is sick with diphtheria (or other infectious disease) and requiring him to exclude, until further notice, all persons from school who reside at the above described premises. If any one has an infectious disease, and is not a pupil in the school, the rule applies in excluding other members of the family from attending school.

This rule also applies to church and all public gatherings. No public funerals are allowed, or a corpse brought into a church, when death was due to an infectious disease. After we believe that all danger from contagion has passed, we again notify the superintendent of schools that quarantine has been removed, and persons from the described premises may again enter school. No house has yet been disinfected. We do not have a pest-house.

8. The construction and cleaning of privy-vaults.

9. Yes.

10. The privy system is certainly the greatest. Deep pits are made in the ground, and, when full, are lightly covered with boards and earth, and the garden house is removed a short distance and placed over a newly made excavation; consequently, in many places the ground is saturated with human excrement and typhoid-fever poison, in some places contaminating wells. The throwing of all kinds of garbage and refuse into the streets and alleys is also a great evil.

CAMDEN.—Pop., 1,100.—DR. W. W. CANNY, H. O.

1. Our board was not organized till late in the summer, hence but little has been done thus far, other than a general cleaning up of streets and alleys. A copy of our rules and regulations was put in every business house and residence, and these have been, generally, well received.

2. Nothing.

3. Salary not yet fixed.

4. Less; but is probably not due to efforts of Health Board.

5. Had no epidemic.

6. To no considerable extent.

7. As yet have not had to deal with them.

8. Have had no obstacles so far.

9. Yes; to some extent.

10. Offensive privies and pig-pens and filthy cow stables. There is too much live-stock kept in town.

CANAL WINCHESTER.—Pop., 1,100.—DR. J. W. SHOOK, M. D.

1. Board organized November 12, 1888. The board has done little else than effect an organization.

2. No expenditures for sanitary purposes.

3. Forty-five dollars per year.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

4. Generally speaking, about the same, with the exception as noted in answer to question 5.

5. An epidemic of measles of a very severe type broke out in March, 1888, and continued through March and April. Almost every case had some serious complication, notable among which were, capillary bronchitis, pneumonia, gastritis, etc.

6. The epidemic noted above.

7. The means, as set forth in the section relative to this matter by the State Board of Health, was adopted by this board. Have had no occasion to use any of these measures to date. Notification is received and houses placarded. Children are kept from school and other public places by parents, after being officially notified by health officer; are not allowed to return until they cease to be a source of infection, and then by certificate from health officer. The board does not superintend the disinfection of private houses. There is no pest-house. Have had no occasion to do any thing since the organization of the board.

8. No experience in enforcing rules or regulations.

9. The citizens appear quiescent in regard to sanitary reform.

10. Effluvia from slaughter-house, pig-pens and privy-vaults.

CANTON.—Pop., 25,000.—DR. S. A. CONKLIN, H. O.

1. We have in the last year begun a system of sewerage in the business and densely populated portions of our city, approximating, when completed, an outlay of about fifty thousand dollars, and hope within six months, or less, to have it completed and successfully operating.

2. Exclusive of street cleaning and street improvements, our outlay for strictly sanitary purposes has been about one thousand dollars.

3. We have just recently formulated rules and regulations governing the health officer and controlling same, as well as sanitary police; also establishing health officer's salary, it being six hundred dollars per annum.

4. The amount of sickness in our city has probably been more than the year previous; especially have we had more cholera-infantum, typhoid, typho-malarial, and malarial fevers; the death rate of the former been very great in the past hot summer months.

5. I cannot say we have had any disease to prevail epidemically; however, some of our physicians claim typhoid, typho-malarial fever and cholera-infantum did prevail in an epidemic form.

7. We have no particular measure further than being ready at all times to erect a temporary building to protect against all contagious patients on short notice. We have heretofore erected temporary buildings; then, when through with them, set fire to them, it being the safest mode, as we think. Notification is always required, and houses placarded. Notice is served on all parties in infected houses to remain at home. After due inspection of persons and premises, they are allowed to return to school. The sanitary police, by order of the board, superintend the disinfection. We keep no pest-houses in or around our city. If we were to build one the people near by, or the tramps, would burn it down in a short time if they knew it was for pest-house purposes.

8. The general cleanliness, such as the throwing of rubbish and garbage and other offal upon our streets, alleys and outlots; also to prevent places for depositing kitchen slops from becoming putrid and form a nidus for the propagation of scarlet-fever and diphtheria.

9. Yes, decidedly so, I can safely say.

10. The want of a good, complete and successful sewerage system; also, I might say, the want of well-paved streets, which is, I am inclined to say, very unhealthy to both brain and body for four or six months of the year; however, the prospects are

bright for having a goodly number of our streets thoroughly and substantially paved within the next twelve months.

CHILLICOTHE.—Pop., 14,000.—DR. T. S. BARNES, H. O.

1. The organization of the Chillicothe Board of Health was not completed until the latter part of last July. The time has been so short since its organization that the visible amount of work done is small, but the character of that done and contemplated, is such as the State Board of Health has outlined, and the peculiar interests and needs of our city have indicated.

2. Very little.

3. Health officer, five hundred dollars, and the clerk, one hundred and fifty dollars.

4. Less.

5. No.

6. Had about twenty-five report cases of scarlet-fever to the first of December; with the exception of one or two cases, they were very mild. The mildness of the disease was so marked that several have suffered with it and knew nothing of it; from those mild cases others have contracted it and kept it smouldering, with here and there a case breaking out with symptoms so decided as to come under the care of the family physician. In no case have I evidence of the disease spreading from any patient under the supervision of the board. We have done much to prevent its spread, and in the section where it bid fair to do so, we, by prompt and decided measures, succeeded in confining it to the original cases. To the mild cases, under the care of no one, is due our inability to completely stamp it out.

7. So far as I have positive evidence, they are all reported, that come under the physicians' notice, and houses are placarded at once. Notice is sent to the principal of the school to which the child or children belong, who are ordered sent home and allowed to play with no other children until they have permission from the board. Where the disinfection is not under the supervision of the attending physician, or some one competent, the board takes it in charge. We have a pest-house, subject to our order at any time.

8. Those of requiring the cases to be reported, placarding the houses, confining and controlling the inmates. We use the flag, and it has, or had at first, about the same effect a red flag would have upon a mad bull. Some of the lawless families defied us, and to isolate them, as we did in better and intelligent families, we took them to the pest-house, and this decided treatment had its desired effect, causing others to submit readily to isolation and the flag. We endeavored to avoid a sensation or any scare, but some of our papers published articles intended to produce both. These were sanctioned by some of our physicians, who joined with the papers, that the flag would keep the country people out of the city, and thereby drive business from it. These views held, and expressed as they were, may have had some effect upon the susceptible class at the time, but at no time, on account of the flags or the attempted scare, could any loss of business be traced to them. Time is adjusting these oppositions, and the flag is now being looked upon as a friendly warning of danger.

9. Some little.

10. Garbage and sewerage.

CIRCLEVILLE.—Pop., 7,000.—S. B. EVANS, *Clerk of Board*.

1. General sanitary work.

3. Forty dollars per month.

4. Usual amount.

5. None.

6. None worth mentioning.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

7. (a) Yes.
(b) No.
(c) Doctor's report to superintendent of school.
(d) On doctor's certificate.
(e) Yes.
(f) No.
(g) Our board—through sanitary police—looks after construction of privy-aunts, cleaning vaults and cellars and keeping alleys, lots and buildings generally clean.
8. Placarding houses infected with contagious diseases.
9. Yes.
10. Our city is kept very clean, and we have but little trouble with citizens regarding necessary sanitary measures. Aside from scarlet-fever epidemic one and one-half years ago, our board has rendered but little service.

CLEVELAND.—Pop., 235,000.—DR. G. C. ASHMUN, II. O.

1. The board of health in this city has continued the work of inspection of private houses and yards; the cleaning of vaults and cess-pools; the inspection of slaughtering-places and stock-yards; the placarding of houses where diphtheria, scarlet-fever or small-pox existed, and the enforcement of ordinances in respect to health. This has been the work of twelve sanitary patrolmen. In addition, all house-sewering and plumbing, either new work or repairing, has been inspected and kept in accordance with the ordinance governing such work. This work has required a special chief-inspector with three assistants. A milk-inspector has been employed exclusively in testing milk. Over two thousand samples have been analyzed. Eleven district physicians have been employed for the sick poor, with free vaccination included. In the office a secretary and two lady copyists have been employed. The records of deaths and births, which have been delayed for some years, have been brought forward to date. The issuing of licenses to slaughter, to construct vaults, to do sewerage and plumbing, receipt of money for cleaning vaults and settling with contractors, permits for burial and shipment of deceased persons, etc., occupied the secretary's time. Under authority from the board, the health officer caused a special inspection of all school buildings, eighty-three in number; made a complete canvass and enumeration of all privy-vaults (over six thousand); made examination and tests of various samples of water from wells in the city, and of food substances of various kinds. Much of the work of the department cannot be stated definitely, as it has consisted in giving information and advice upon all possible subjects involving sanitary questions.

2. About twenty-seven thousand dollars (\$27,000).
3. Twenty-five hundred dollars (\$2,500).
4. No material change.
5. No epidemic has prevailed.
6. Diphtheria, scarlatina, measles and typhoid-fever have been present throughout the year.
7. Notification is required from physicians or others having the care of cases of contagious disease, and houses are placarded for diphtheria, scarlatina, and small-pox. The superintendent of schools is notified each morning of the existence of diphtheria, scarlatina, measles or small-pox, giving name and residence, and the children from any family where such a disease is reported, are excluded from the schools. The board of health superintends the disinfection of private houses. There is a pest-house, or small-pox hospital, for small-pox only, kept in order all of the time. Undertakers are required to place the bodies of those dying from diphtheria, scarlatina, or small-pox, in a casket within twelve hours from the time when they are called, and the casket is not again opened. Public funerals in such cases are not permitted.
8. The greatest difficulty arises in securing prompt and correct reports from physicians in regard to contagious diseases, and in making returns of births.

9. Yes. They only ask that information or regulations shall be well considered and intelligently applied.

10. The continuance of privy-vaults and cess-pools; the constant in-door life; the want of an efficient garbage-gathering and disposal.

CLYDE.—Pop., 3,500.—ALEX. HARNDEN, H. O.

1. Since organization, work has been chiefly sanitary, especially the cleaning of hog-pens, privy-vaults, cellars, etc., and abatement of nuisances generally.

3. Seven dollars per month, in addition to his salary as village marshal.

4. Certainly no greater, probably less; health unusually good at present time.

5. None.

6. Typhoid-fever to the extent of, perhaps, twelve cases.

7. None; except as stated in reply to question one. None of these precautions have been needed. There is no pest-house.

8. The disuse of hog-pens during the summer months.

9. I think there is.

10. Drainage from privy-vaults through the sandy soil into wells.

11. Board organized June, 1888.

COALTON.—Pop., 1,200.—DR. A. C. MESSENGER, H. O.

1. Nothing.

2. Work done by property owners.

3. Honor only.

4. Less.

5. Whooping-cough.

6. Scarcely any.

7. Children are always prohibited from school. Board has never deemed it necessary to act.

8. Have no rules.

9. No.

10. Want of action of board.

COLLINWOOD.—Pop., 2,000.—DR. JOHN S. WOOD, *Clerk*.

1. Board held its first meeting August 5; a sanitary policeman was appointed to inspect the village; following his inspection numbers of privies were cleaned, and several other nuisances were abated. The board has supplied itself with records, etc., for collecting births and deaths.

2. Sixteen dollars for services as sanitary police, which, I believe, was paid out of general police fund.

3. Not yet determined.

4. About the same. Infant mortality larger.

5. None.

6. Some ten or twelve cases of diphtheria from November 1, 1887, to October 31, 1888, and three or four of typhoid-fever.

7. Notice must be given to health officer by attending physician within twenty-four hours after diagnosis; houses are placarded; children are kept at home and not allowed to go to school until they have permission of health officer. The board, as a

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

board, have not superintended the disinfection of private houses as yet; members of the board, as individuals, have done so. Will probably print our rules and regulations in pamphlet form sometime during the winter; will send you a copy when we do.

8. Care of water-closets and surface drainage. But as we have been hampered by not having any one authorized to do the work, we cannot complain very much; our real work comes next spring and summer.

9. I think so.

10. Want of drainage, want of facilities for collecting and disposal of garbage and night-soil. We have no sewers, while the surface drainage has been very much improved. Yet, we have surface water standing in some parts of the village continuously.

CONNEAUT.—Pop., 1,500.—DR. E. D. MERRIAM, H. O.

We would respectfully report that since the date of our organization, on June 5, 1888, considerable progress has been made in placing our village in a better sanitary condition. Extensive drainage has materially improved a large section that heretofore was low, wet and unhealthy. Many privy-vaults and cess-pools have been abated, and we are getting rid of them as fast as possible, substituting surface receptacles that may allow frequent removal of droppings, and disinfection. We are fully alive to the fact that it is utterly impossible to have pure well water in the vicinity of vaults and cess-pools, and where the surface of the ground is kept filthy by the slops and garbage carelessly thrown out from back doors, saturating the porous soil, and percolating to the wells, carrying its poisonous germs to the drinking water.

Water-works are in contemplation for this place, but until they are completed we should look sharp to the purity of the wells, and at the same time avoid the sickening odors that arise from garbage and slops to poison the air we breathe. Garbage is now largely gathered up by collectors and carried out of town.

Twenty-three cases of contagious or infectious diseases have been reported, as follows: Typhoid-fever, 9; scarlet-fever, 6; diphtheria, 1; whooping-cough, 8.

In cases of contagious and infectious diseases we placard the houses, and notify the superintendent of schools, and the pupils thus refused admission, are re-admitted on obtaining certificate from the health officer.

In some cases where typhoid-fever prevailed, we have personally examined the premises and corrected all suspicious surroundings, caused a general cleaning up and disinfection, and ordered the water to be boiled before using.

CUYAHOGA FALLS.—Pop., 2,800.—DR. W. S. HOUGH, H. O.

1. Our board organized July 1.
2. Do not know.
3. Have not fixed salary yet.
4. Less than previous year; very healthy.
5. No prevailing disease.
6. None.
7. Notifications are received, and superintendent of public schools notified.
9. Cleaning privy-vaults.
10. Many wells not properly constructed.

DAYTON.—Pop., 60,000.—DR. J. M. WEAVER, H. O.

1. During past year our board of health has held regular meetings every two weeks. They have succeeded in having council pass an ordinance requiring the placing

of placards upon houses containing cases of contagious diseases. Also requiring *private funerals* in case of *death* from contagious disease. Also condemning several houses which, because of being in a dilapidated and unhealthy condition, were unfit for human habitation. They have also thoroughly investigated the "*dressed beef*" question, kept an eye on our public markets, and done many other things of more or less importance in a sanitary way.

2. About \$3,000 has been expended for sanitary purposes.
3. Salary of health officer, \$600 per year.
4. About the usual amount of sickness has prevailed in our city during the past year.
5. We have had no epidemics.
6. Infectious diseases have not prevailed to any great extent.
7. All physicians report cases of infectious diseases. Houses are placarded. Teachers of schools are notified and children not allowed to attend until attending physician pronounces all danger passed. Houses are disinfected under direction of health officer. Our city provides a pest-house outside of corporate limits, which is kept furnished and ready for use at all times.
8. Our board has had the greatest difficulty in enforcing ordinances against the running of waste water into streets and alleys, and the matter of collection of garbage.
9. Our citizens are considerably interested in sanitary matters, and inclined to aid sanitary authorities.
10. The greatest sanitary evil of our city is its lack of sewerage, no system being in use, all slops and sewerage being turned into uncemented sinks and cess-pools.

DEFIANCE.—Pop., 7,000.—J. S. HALLER, *Secretary*.

1. Principally cleaning up garbage, old buildings and privy-vaults.
2. About \$100.
3. \$45.00 per month from March to November. Balance of year, \$25.00 per month.
4. About the same.
5. Confined principally to measles.
6. Of short duration.
7. Take immediate action when reported by sanitary policeman. Notified promptly and houses are placarded. Kept from school and re-admitted when danger is past. Board does superintend disinfection. No pest-house.
8. The cleaning of privy-vaults seems to be the greatest.
9. Think not.
10. Think almost everything in a general way.

DELTA.—Pop., 1,600.—DR. S. P. BISHOP, H. O.

1. We are not in working order.
2. Nothing.
3. Nothing.
4. About the same.
5. Nothing, except measles.
6. Slight extent.
7. Each physician acts in accordance with his own ideas.
8. No enforcement of rules has been tried.
9. Very little, if any.
10. Surface wells for water supply, contaminated by privy-vaults, barn-yards and

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

surface filth, with improper disposal of garbage; also defective warming and ventilating of public, as well as private, buildings.

DELAWARE.—Pop., 9,000.—DR. JAMES M. CHERRY, H. O.

1. The health officer has visited and personally inspected 520 places, and when found in an unsanitary condition ordered the same put in good order.
2. Three hundred and fifteen dollars.
3. Three hundred dollars.
4. I think less.
5. No.
6. We have had eight cases of diphtheria, two deaths; seven cases of scarlet-fever, one death.
7. The doctors report the cases, and the health officer placards the houses as soon as notified, and the house is ordered disinfected. No pest-house.
8. Getting reports of births.
9. Yes.
10. Can not tell.

DUNKIRK.—Pop., 1,800.—DR. C. C. McLAUGHLIN, H. O.

1. Personal inspection every month.
2. One hundred dollars.
4. Less.
6. None.
7. By strictly obeying our sanitary laws.
8. Keeping premises thoroughly and frequently cleansed.
9. Yes; no trouble to enforce them.
10. Negligence.

EAST LIVERPOOL.—Pop., 10,000.—WM. GIBBS, H. O.

1. We have a general supervision of the city, keeping privies, back-yards and all premises, private and public, in as good sanitary condition as possible, and having all dead animals removed from the city. The health officer sees that the above is strictly attended to during the entire year.
2. About four hundred dollars.
3. Three hundred dollars.
4. We have had less sickness the past year than we have had for a number of years previous, considering the increase of population.
5. Measels, in a light form.
6. Not any.
7. Quarantine for small-pox and other infectious diseases; houses are placarded and children are not allowed to attend school until the attending physician gives them a certificate stating that they are free from disease. The health officer sees that the above rules are strictly enforced, and that all houses where such diseases have been, are thoroughly disinfected.
8. Throwing slops in streets and alleys; this will be obviated in the spring. The city has expended fifty thousand dollars this summer and fall for sewerage, which will be ready for use in the spring.

9. The interest in our city is great in any sanitary reform. They are now about to increase our water-works in its capacity, so the sewerage system will be a success.

10. Throwing slops and garbage into the streets and alleys, and shallow privy-vaults.

EAST PALESTINE.—Pop., 1,600.—DR. A. L. LECASTER, H. O.

1. Nuisance arising from twenty-one privies abated; from pig-sties, three; stagnant pools of water, two; burial permits issued, three. Total number of nuisances abated from July 26th to November 20th, twenty-six.

2. No money spent for sanitary purposes, except paying salary of health officer and secretary of local health board.

3. Salary of health officer, sixty dollars per annum; secretary health board, fifty dollars.

4. Sickmess has been much less this year than last; last year we had one hundred cases of diphtheria within the village, this year none.

5. Measles has been the only epidemic disease, about two hundred cases, most of the cases mild.

6. One case of diphtheria occurred one mile distant from the village, only one case.

7. The physicians will not report their cases to the board. I report to superintendent of school such cases as I hear of, and have them kept from school until I give them certificate of re-admission. The houses are not placarded. The board does not superintend disinfection in private house. There is no pest-house. The board has not met to transact any business since August 8th.

8. Putting cement vaults in privies when less than fifty feet distant from wells, is the only thing that has met with an obstacle, and getting physicians to report to the board cases of infectious diseases.

9. I do not think there is, although the death rate per month has fell from 7 to 4 since July 26th.

10. Want of sewerage and drainage. The board of health was organized July 9th. I was appointed health officer July 25th.

FAYETTE.—Pop., 1,000.—E. J. EMERICK, H. O.

1. Our board has never been fully organized. We never have had but one meeting.

2. Not any.

3. Not any.

4. Less.

5. No epidemic.

6. A few cases of measles.

7. Houses are placarded.

8. We have not had to enforce any.

9. There is.

10. Privy-vaults and pig-pens.

FELICITY.—Pop., 1,600.—T. P. RICE, H. O.

1. Extra precautions have been taken against privy-vaults and drainage. Weeds on outlying streets and vacant lots have been kept cut down.

3. None.

4. Greater.

5. Typhoid and other types of fevers have prevailed to a considerable extent, but not fatal in any case so far.

6. None, unless typhoid should be so regarded.

7. By careful and frequent inspections of premises and out-buildings. (b) By school board and parents. (c) The same way. (d) Yes, when necessary. (e) No. (f) I have answered this in a general way in answering other questions.

8. Our citizens comply cheerfully, except in isolated cases, then we *make them do so*.

9. Decidedly.

10. Want of sewerage.

FINDLAY.—Pop., 10,000.—AMOS BEARDSLEY, H. O.

1. I was appointed health officer last July. They have done a great amount of work in the way of cleaning privy-vaults, cess-pools, and removing garbage.

2. About \$1,000.

3. \$45.00 per month.

4. About the same as last year, so the physicians say.

5. None.

6. None.

7. Have had none to restrict. We have no pest-house.

8. The greatest obstacle is to keep the wells and privies fifty feet apart.

9. A little. Not what there should be.

10. Bad wells and privy-vaults.

FLUSHING.—Pop., 350.—DR. J. V. WEBSTER, H. O.

1. Not much work done. Board has met several times, but not much done.

2. Board voted one hundred dollars at last meeting.

3. Salary paid per year is \$40.00.

4. About the same as last year.

5. We had several typhoid and malaria cases in September and October.

6. Very little.

7. We have overhauled the water-closets. No placards. Health officer stops the children. No precaution on readmission. No pest-house.

8. The people do not want to go by our rules as to water-closets.

9. I think so.

Health board established about two months ago.

FREDERICKTOWN.—Pop., 900.—DR. W. W. PENNELL, *Member Board of Health*.

1. None. Board was established in May, 1888.

2. None expended.

3. Has received none. The marshal is entrusted with that duty, by ordinance.

4. About the same as other years, if measles and roetheln be excepted.

5. Measles and roetheln. Measles were generally of typical variety. Roetheln preceded measles, was complicated with cervical adenitis and often acute rheumatic symptoms.

6. Measles were general.

7. None. People have governed themselves by the advice of their family physician
8. None enforced.
9. No.
10. The town is fairly healthy; but the removal of garbage oftener would be beneficial.

GALION.—Pop., 6,000.—DR. WEBB J. KELLY, H. O.

1. About sixty vaults cleaned by order of board. General cleaning of alleys and back yards.
2. Three hundred and fifty dollars.
3. Health officer and secretary combined, one hundred dollars per year. One sanitary policeman, fifteen cents per hour actual work.
4. Less, during summer.
5. No epidemic.
6. Very few cases scarlet-fever, typhoid-fever, measles and diphtheria.
7. Board notified, houses placarded, superintendent of schools notified, etc. (see blanks inclosed). We have pest-house. Physician attends to disinfection.
8. Cleaning of vaults and preventing digging of cess-pools. The latter are not permitted.
9. Yes.
10. We have no great evils.

GALLIPOLIS.—Pop., 5,000.—DR. E. WESTLAKE, H. O.

1. There has not been much work done.
2. Not to exceed one hundred and fifty dollars.
3. Seventy-five dollars.
4. Rather less.
5. None.
6. None whatever.
7. Quarantine.
8. In regard to hog-pens.
9. There is.
10. Hog-pens and privy-vaults.

GARRETTSVILLE.—Pop., 1,200.—DR. GUY WARREN, H. O.

1. Most of it was remedying defective drainage.
2. No great amount.
3. Nothing.
4. About the same.
5. Whooping-cough, mild form.
6. None.
7. Have only organized lately. Done nothing.
8. Have had no trouble.
9. There is.
10. Bad dainage.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

GEORGETOWN.—Pop., 1,350.—DR. THOS. W. GORDON, H. O.

1. None whatever.
2. Not one cent, that I am aware.
3. Nothing, whatever.
4. About as usual, as far as I know. There have been a few cases of remittent fever.
5. There has been no epidemic of any kind.
6. I have heard of a few cases of chicken-pox.
7. Nothing has been done, excepting the removal of a single hog-pen by the owner, because requested at the complaint of a neighbor. Nothing has been done.
9. Apparently fast asleep, as a general rule; very few exceptions to the rule.
10. Many alleys, a few back-yards, cellars and privy-vaults should be cleaned.

GLENVILLE.—Pop., 800.—CHAS. B. COOK, H. O.

1. Abating nuisances, on an average of two per week.
2. In the majority of instances we make the people pay for their own sanitary improvements.
3. Two dollars per day when actually engaged.
4. Less.
5. There has been no epidemic.
6. About one-half dozen cases Roetheln.
7. Quarantine them.
 - (a) Yes.
 - (b) Yes, they are prohibited by the board.
 - (c) By certificate.
 - (d) Yes.
 - (e) No.
 - (f) All sanitary requirements are rigidly enforced.
8. Obtaining reports from physicians, and cleaning water-closets.
9. Yes.
10. Decomposing vegetable matter and the want of sewerage.

GREEN SPRING.—Pop., 1,200.—DR. D. P. CAMPBELL, H. O.

1. Board organized August 7, 1888. At the time of the organization of the board of health in this place the sanitary condition of the village was very good. It has been found necessary to have some alleys cleaned, and old buildings renovated. There is some work to be done in regard to privies which will be attended to in due time.
2. The corporation has not incurred any expense in this matter.
3. Nothing.
4. Less.
5. Not any.
6. Not any.
7. No need of any at the present time.
8. So far, no obstacle.
9. Not as much as we would like to see, but we feel that in time this will change. This is something new to the people, and they must be educated to see the necessity of enforcing certain sanitary reforms for the general well-being of the community.
10. The faulty construction of privy-vaults, and their neglect thereafter.

GREENVILLE.—Pop., 6,000.—DR. S. M. HAGER, H. O.

1. The board appoints two sanitary officers, who make a house to house inspection every spring. Every out-house, stable-yard, pig-pen, etc., is inspected, and, if found filthy, ordered cleaned. Privy-vaults are cleaned once a year. Vault cleaners are required to report to sanitary officers what work is done by them, and those who fail to comply, within a certain length of time, with the notice given them, are notified that the work will be sold and added to the tax-list.

2. The amount expended for the year ending October 31, 1888, was \$280.10.

3. Since May 11, 1888, salary of health officer, \$100.00. Before that, \$150.00.

4. The amount of sickness has been less than in previous years.

5. No disease has prevailed epidemically in the city the past year. A few sporadic cases of scarlet-fever.

6. There has been but very few cases of infectious disease present in the city.

7. Physicians are required to report all infectious diseases to the board. The board furnishes printed postal cards to the physicians for the purpose. Houses are placarded by the sanitary police, and the school superintendent notified of the sickness, and none of the family are allowed to attend school, or none who have been exposed to the infection are allowed to attend school, and the parents are given strict orders not to allow their children to run around the streets or associate with other children, or attend school. Patients are readmitted when, in the opinion of the attending physician, it is safe to do so. The board does not superintend the disinfection of private houses. There is no pest-house belonging to the city.

8. The board has met with the greatest difficulty in enforcing the law regarding the cleaning of privy-vaults, and regulating their construction.

9. There has been a decided growth of interest among our citizens in matters of sanitary reform; so much so that it was unnecessary to notify a great many of our citizens to remove nuisances who heretofore were compelled to remove the same. Mr. Strawn, sanitary expert, was called here last spring to examine the wells, earth formation, and water supply. From his talk, and from letters published in the papers, our citizens gained a great deal of knowledge upon sanitary matters.

10. The greatest sanitary evil of our city is the water supply, the wells being contaminated by the privy-vaults. A great many vaults are dug down to the gravel, and the wells are from ten to sixteen feet deep in gravel, and there is a communication between the vault and wells.

GREENWICH.—Pop., 800.—DR. R. H. REYNOLDS, H. O.

Our board has been organized but a short time; think it has a good future.

1. A general cleaning of town and vaults.

2. No.

3. \$40.00 per annum.

4. Less.

5. None.

6. None

8. Privy-vaults.

9. Yes.

10. Sewerage.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of his Report.

HAMDEN JUNCTION.—Pop., 600.

DR. PROBST, COLUMBUS, O.:

Dear Sir: I have resigned my position as health officer of this place, and I do not know as they have one, but in this letter I will answer said questions for the board, as I have more to do than any one else with the matter.

Respectfully,

L. B. SMITH, M. D.

1. The board has been very dilatory in their work, and have done nothing more than to notify a few to clean up premises, and to change the condition of a few privies.
2. We have no fund allowed us for sanitary improvements.
3. The health officer receives twenty-five cents for every notice he issues; nothing for extra work or writing.
4. Regarding sickness, cannot see any change.
5. No disease has prevailed that is a dangerous infectious disease, and no effort was taken to stop the milder forms, such as measles, etc.
6. We have had a few cases of scarlet-fever, and these I kept safe in doors.
7. Our board has never taken any measures to avoid such disease; will wait until it calls upon them when too late.
8. Have had no rules to meet an obstacle.
9. There is not the least interest among our citizens to support or favor a board of health.
10. Our privies are the greatest evils.

HAMILTON.—Pop., 20,000.—DR. J. M. PARKS, H. O.

As health officer, I have spent at least two-thirds of my time attending to the calls upon me to correct nuisances, much of which work belongs specifically to the street commissioner. Aside from this, I have the supervision of vault emptying and vault digging, to see that cellars and yards are in a good sanitary condition; also that contagious diseased patients are properly isolated and their excreta disinfected, and in case of death to have them buried within twenty-four hours, and house properly fumigated and disinfected.

All cases of contagious diseases must be reported to the health officer in twenty-four hours, and deaths of same in twelve hours.

We require all corrections of nuisances to be paid for by the tenants or owners of the premises. Therefore, the board of health has but little expense.

The health officer is paid four hundred dollars per annum; the meat and milk inspector is paid three hundred dollars; the secretary is paid two hundred.

We make out annual reports to the city council, which, I think, are of value, but they are never read or printed; therefore, it is labor lost. In 1885, the Statutes of Ohio relating to health and the ordinances and rules and regulations governing the board of health of the city of Hamilton, were published by order of the board of health; to this several amendments have been made and published in the papers. A copy of these I mail to you.

I have been in the board of health since the spring of 1885. In that time there has been but one epidemic (measles), and zymotic diseases, I think have been very much reduced by the rigid adherence to isolation and disinfection. Only small-pox cases would be placarded, or cholera, if it were present. Children from infected house are kept from school by the health officer ordering them to stay at home, and notifying their teachers not to admit them without the health officer's certificate.

The health officer attends to disinfecting houses. There is a pest-house on the poor-house farm, near the corporation line, that we use.

The emptying of privy-vaults has met with the most serious objection, because the city has no land on which to dump, and the board of health has no money set apart for their use for any purpose whatever. The only difficulty with us is a legal dumping ground or place. I think the board are unanimous in their opinion that the river is the proper place to dump the liquids and semi-liquids of the city, and cremation for the solids.

HARTWELL.—Pop., 2,000.—DR. C. W. TUFTS, H. O.

1. Our board of health was organized the tenth of April last. We have the rules and regulations adopted by the board, printed in pamphlet form, which are distributed throughout our village; we send you copy, which rules we have succeeded well in enforcing, and which will answer part of your question. We have been to no particular expense, except in printing rules and placards.

3. The salary paid to health officer is fifty dollars a year. Council appropriated one hundred dollars.

4. The amount of sickness in our village has been much less than in previous years.

5. We have had no epidemic prevailing here for the past year.

6. There have been, since April last, about six cases of diphtheria, all of a light character. Not a case of scarlet-fever. No cases of typhoid. A few cases of whooping-cough. Not more than a single case of measles.

7. We furnish all our physicians with blank postals, and they report all infectious diseases. All houses having in them either of the following diseases are placarded: Scarlet-fever, diphtheria, yellow-fever or small-pox. Children are kept from school by the health officer reporting the families in which an infectious disease exists, to the principal, who prohibits any member of the family attending until a certificate is brought from the attending physician, stating that there will be no further danger of contagion. As to their attending other public places, we have no other means than furnishing them with a copy of our rules and regulations. We find they are very negligent of this latter rule. Disinfection in private houses is done through the advice of the attending physician, or the health officer. We have no pest-house.

8. The greatest objection to any of our rules is that requiring a placard put up in a conspicuous place.

9. There is a manifest growth of interest among our citizens in matters of sanitary reform, particularly among the members of the board of health, and of the village council.

10. In my opinion, the greatest sanitary evil of our town is the lack of a proper system of drainage; we are located in the Mill Creek valley, formerly noted for the virulency of its malaria, but since being partially drained, it has improved greatly in that respect. It is not an uncommon thing to see ponds of water standing in different places through the village, after a heavy rainfall. It soon disappears, however, if the ground is not frozen, by soaking down into the gravel-bed, which underlies the greater part of our village. The water supply is from cisterns and driven-wells. We seem to be peculiarly exempt from typhoid-fever, for when it was so prevalent about Cincinnati, a year or so ago, we had not a single case that was contracted here.

HICKSVILLE.—Pop., 1,400.

1. Cleaning privies, cellars, all out-buildings, and removing all decaying matter, together with drainage.

2. We have nothing except two police officers.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

3. \$2.00 per day for actual services, which has not exceeded eight.
4. Less.
5. Malarial fever and low grades of fevers.
6. None.
7. No pest-house.
8. Removing decaying vegetable matter.
9. Yes.
10. Impure water.

HUDSON.—Pop., 1,800.—DR. F. HODGE, H. O.

1. We have a sanitary officer whose business it is to have all privies cleaned once in three weeks, and, meanwhile, disinfected every day with dry earth, lime or ashes. We have abolished privy-vaults. This sanitary officer is under the direction of board of health and the health officer.
2. I cannot.
3. \$100.00 per year.
4. Greater.
5. A low form of remittent fever for last three months. It is different from anything I have seen before. There have been a dozen or more cases. Two deaths.
6. Diphtheria last winter.
7. We quarantine strictly. Houses placarded. Children kept from school. Re-admitted with certificate. Board has not superintended disinfection. There is no pest-house.
8. No obstacles. All are ready to do whatever is suggested.
9. See 8.
10. The well-water is perhaps the greatest.

HURON.—Pop., 1,100.—DR. JOS. P. ESCH, H. O.

1. Our work here has been of a general character, such as seeing that streets and yards were kept clean, that no out-houses became offensive, that dead animals and decaying fish were buried, etc.
2. I cannot tell the amount of work done nor the amount of money expended, but the latter will not exceed fifty dollars.
3. Nothing.
4. Sickness has decreased, especially infectious diseases.
5. None.
6. Have had a few cases of diphtheria, scarlet-fever and typhoid-fever, but have always confined such cases to the houses where they first broke out. None lately.
7. All physicians are required to notify the health officer at once in case they have a case of diphtheria or scarlet-fever on hand. The health officer then placards the house and establishes a quarantine, maintaining it until the attending physician certifies that it can be raised. Not only are children kept from school, but no one is permitted to leave the house except by permission of the health officer. The health officer directs but does not superintend disinfection. Since the above has been enforced we have had several cases of diphtheria and scarlet-fever, but have always confined them to the houses where they first broke out.
8. Quarantine.
9. Not much. Some, though.
10. Filthy alleys and yards.

IRONTON.—Pop., 14,000.—DR. N. K. MOXLEY, JR., H. O.

In reply to your questions, I submit the following answers. The local physicians do not report contagious or infectious diseases to health officer or board of health, so that statistics are out of the question. I will answer your questions as fully as I can from the amount of facts that I can obtain:

1. Most of the sanitary work done by the board has been in a general way to better the sanitary condition of our city. New vaults have been ordered dug, and out-houses disinfected and put in good sanitary condition. Stagnant pools in the city have been drained, and gutters kept clean to facilitate drainage. And the creek running through our city has been "cleaned up" several times this summer.

3. \$50.00 per annum.

4. About same as during previous years.

5. None has prevailed epidemically.

6. Not very extensively.

7. No notification of infectious diseases. No houses placarded. Children are usually kept from and returned to school by advice of physicians. Board does not superintend disinfection of private houses. The pest-house is in good condition and ready for use.

8. Vaccination of children. In our city children who have never been vaccinated are permitted to attend school.

9. Not especially noticeable.

10. Children from a house where there is an infectious or contagious disease should not attend school or public places, nor should a child recovering from these diseases be permitted to re-enter school without a physician's certificate. Contagious and infectious diseases should be reported to local board or health officer. Imperfect drainage is conspicuous on a good many of our streets.

JACKSON.—Pop., 5,000.—L. MAY, H. O.

1. Our efforts have been directed to keeping our village clean as far as possible.

2. No expenses have been incurred.

3. One hundred dollars.

4. If any difference, less.

5. No prevalent disease. The prevailing disease of this part is malarial fever, but there has been but little of it this season.

6. None.

7. None.

8. Those relating to hog-pens.

9. Our people comply willingly with all sanitary measures, but little has been done in this matter in previous years.

10. The sewerage.

Our board has been organized for several years, but until last year had no systematic method of action, having no regular health officer; but for the last and the present year have appointed a regular health officer, under salary of one hundred dollars per year; but until the members of the board are paid for their services, the service will not be as good as it should be. They also need the co-operation of the council, and we have not had that as fully the past year as we should have.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

JEFFERSONVILLE.—Pop., 750.—DR. G. M. IRELAND, M. D.

1. The work done by our board of health this year was simply to abate nuisances and remove garbage.
2. Nothing.
3. Nothing.
4. I think less.
5. No epidemic.
6. None.
9. Not active.
10. Bad water.

KENT.—Pop., 3,750.—O. H. NEWBERRY, H. O.

1. It is the duty of the health officer to inspect the whole village and see that all privy-vaults and slop-drains are kept clean and in a sanitary condition.
2. One hundred and fifty dollars.
3. Two dollars per day for time employed.
4. About the same.
5. Not any.
6. Not any.
7. No houses placarded. Children from infected houses are kept from school. No children are admitted to schools until all danger is past. No pest-house in the place. There is no work done, except that by the health officer.
8. No any.
9. Not as much interest as should be taken.
10. Lack of sewerage.

LEBANON.—Pop., 300.—ISAAC SMITH, H. O.

1. Consisted of enforcing cleanliness and cleaning streets and alleys.
2. Two hundred dollars.
3. One hundred dollars.
4. It has been greater than usual.
5. Typhoid-fever.
6. None.
7. Enforce cleanliness. No necessity for action.
8. Requiring physicians' reports.
9. Yes.
10. Polluted wells.

LEETONIA.—Pop., 2,600.—DR. R. T. MARKS, H. O.

1. We have, so far as lay in our power, succeeded in having the town thoroughly cleaned up, getting rid of all surplus rubbish, cleaning the cellars, causing all overloaded privy-vaults to be emptied and removed, or new ones dug; also caused a ditch to be dug through a damp, marshy piece of ground, for the purpose of drainage, the above piece of ground being a prolific source of malaria.
2. No.
3. None.
4. Greater.

5. Diphtheria prevailed to quite an extent in the southern part of the village, known as Grafton, the sanitary conditions and surroundings being better adapted for germ diseases to fertilize and multiply than any other part of the village, although there was an occasional case in other parts of the town. This disease has been raging more or less since August 1, but at the present writing, November 5, it is nearly wiped out. The fatality of the disease has been about 7 per cent., and those have been of a laryngeal type.

6. Nothing more than is embraced in No. 5.

7. The board has been practically handicapped from the little attention paid to the request to quarantine all cases, and the non-reporting of new cases; if all orders had been obeyed, the epidemic would have been stamped out in a short time. The board does not superintend the disinfection of private houses. There is no pest-house.

8. The rules applying to quarantine and reporting cases of infectious or contagious diseases.

9. Yes.

10. Poor water, and the miserable and filthy condition in which some of the inhabitants persist in living.

LEESBURG.—Pop., 725.—DR. H. A. BEESON, H. O.

In answer to your request for report from sanitary officers, etc., I can only say that the work has been in a very discouraging state in this place in the year last past. Owing to matters wholly foreign to the health board, the village corporation became involved financially to an unprecedented degree, and to economize, the body corporate suspended the health board. I, however, induced the council to carry on certain sanitary measures in an unofficial way. There are many obstacles to the carrying on of sanitary measures in villages, even when the council of the village is favorable. I can, however, in an unofficial way, answer your questions. Having the promise of the reinforcement of local and general sanitary laws for the coming year, it is to be hoped that in future it may be more satisfactory.

1. By having all privy-vaults cleaned and disinfected; surface drainage improved; wells inspected and improved.

2. All done this year by private enterprise—no public funds used.

3. No salary.

4. Less. This was formerly considered an unhealthy village on account of typhoid and typho-malarial fevers. It has not been clear of them for many years, until last year the cases were few and milder, and this year (last past) there have been very few and very mild cases. Sanitary measures have been employed in the past two years with very encouraging results.

5. An epidemic of measles prevailed in January and February, in which there were 300 to 500 cases and one death. Following this, was what might be called a light epidemic of catarrhal fever (influenza), with, possibly, 100 cases, none fatal, and running through April and May.

6. None, except see 5. Schools closed three or four weeks.

8. That requiring the prompt report to the health officer (when we had one), of the presence of contagious diseases in families.

9. Yes.

10. Imperfect drainage.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

LOGAN.—Pop., 3,700.—DR. I. C. WRIGHT, H. O.

1. Have only been organized since August.
2. Nothing.
3. It has not been fixed yet.
4. Rather less.
5. We have had no epidemic, except measles last winter.
6. Diphtheria, scarlatina and typhoid-fever to a limited extent.
7. (a) Yes.
(b) No.
(c) Children are excluded from school by superintendent, through orders from the board, and re-admitted by the same.
(d) No.
(f) No.
8. Can't say yet.
9. Not yet.
10. Filth and garbage thrown in streets and alleys.

LONDON.—Pop., 4,000.—FRED. NEWCOMB, H. O.

1. Work done was mostly the cleaning of vaults and yards and alleys.
3. Twelve dollars and fifty cents.
4. Less.
5. No disease has prevailed.
6. No.
8. In regard to vaults.
9. There is, and town was never in better condition.
10. We have no great evils, and health of town has not been better for years. Fever started in one house in which four families lived. The house was closed, but afterwards cleaned, and is now occupied. The same was done with another on account of dampness, but it was afterwards fixed and is now occupied; otherwise, we have no trouble to amount to anything this season.

LOUISVILLE.—Pop., 1,500.—F. E. FAVRET, H. O.

In accordance with your request, I shall endeavor to furnish you a condensed report of the amount and character of the sanitary work executed by the board of health of the village of Louisville during the year ending October 31, 1888. Though the board was organized in June, 1886, yet its most important measures were achieved during the past year, among these being:

1. The passage of a regulation requiring all privy-vaults to be made impervious, to be cleaned at least once a year, their contents disinfected and removed beyond the village limits, and recommending the use of the dry-earth closet. The enforcement of this regulation has met with the greatest obstacle, though it has been complied with by three-fourths of our citizens. But the *pagans* have been obstinate, and even defiant, in their ignorance, and the board will no doubt be obliged to *convert* them by force.

2. The village of Louisville contains three grave-yards, which are made the receptacles of all the dead of the surrounding country. This may be considered, next to the perviously mentioned privy-vaults, the greatest sanitary evil in our midst. At the instance of the board of health, the village council passed an ordinance prohibiting the interment of

the dead within the village limits after December 20, 1888. It is almost certain that this ordinance will be complied with.

Nothing has been expended for sanitary purposes. The health officer receives no salary.

The amount of sickness in our village during the past year has been notably less than during the preceding year, when typhoid-fever prevailed epidemically. We have had a few cases of diphtheria and scarlatina.

Notification of infectious diseases is received by the board, and all houses in which such disease exist, are required to be placarded. "It is unlawful for any person who has been exposed to any infectious disease to appear on the streets of the village without having first obtained from the physician in attendance on said disease, a certificate declaring that no further danger exist from such disease, or that it is necessary for such person to so appear, and that the clothing worn by such person has been changed or thoroughly disinfected before his so appearing."

There is a manifest growth of interest in sanitary matters among our citizens; many, who were formerly indifferent, now sustain and defend the measures adopted by the board of health.

MADISON.—Pop., 1,000.—DR. A. H. STOCKHAM, H. O.

1. Premises have been ordered put in good sanitary condition; and, by order of the board, proper drainage has been secured in the lowest portion of our town.
2. About \$30.00.
3. Nothing.
4. Average amount of sickness, except during months of September and October, when it was in excess of usual amount.
5. Typhoid-fever during September and October. Not unusually severe. One case of intestinal hemorrhage. All recovered.
6. Diphtheria, four or five cases. Scarlet-fever, very few cases—less than usual Typhoid-fever, ten cases.
7. Brothers and sisters of patients are kept from school. Typhoid-fever stools buried. Notification not received or houses placarded. Doctor's advice followed as to return of scholars. Board does not superintend disinfection in private houses. No pest-house.
8. All orders obeyed to date.
9. Yes.
10. Our village is most healthful. Some premises are allowed to become foul, but such cases are exceptional.

MADISONVILLE.—Pop., 1,800.—C. P. GRAY, D. D. S., H. O.

1. Simply nothing.
2. Nothing.
3. Hardly thanks.
4. Probably little less.
5. None.
6. None.
7. None.
8. Disinfection and erecting new or abandoning old water-closets; also waste-water tiled to street-gutters. Have asked the board to act on same, but without avail.
9. Very little, if any.
10. Water-closets, waste-water in gutters and garbage.

MANSFIELD.—Pop. 15,000.—Dr. R. HARVEY REED, H. O.

1. Our board of health endeavors to hold monthly meetings, at which the health officer and sanitary policemen report the progress of the sanitary labors in the city, and lay before them their plans and arrangements for the operation of the same. Our board, after hearing and discussing these plans, decides on and gives such directions for their application as they, in their judgment, deem proper and best. In cases of special importance the board makes personal investigation, in connection with the health officer and sanitary policeman. During the past year they have passed quite a number of resolutions in the interest of the public health, and have recommended a few ordinances and made one personal investigation.

2. About \$1,000.

3. The health officer gets nothing but thanks and curses. Our sanitary policeman receives \$300.00 a year.

4. Less.

5. We had a mild epidemic of measles, but have no means at command by which even an approximate history can be given.

6. To a small extent. A few cases of scarlet-fever, with a few cases of diphtheria and chicken-pox, comprise about the whole extent.

7. (a) Postal cards, with blank forms printed on them, together with printed instructions, are placed in the hands of all the doctors, who are requested to report all infectious diseases within twenty-four hours after their discovery. (b) In epidemics of dangerous diseases, the houses are placarded. (c) The superintendent of instruction prohibits all children attending school from an infected house. (d) No precautions of a definite character has been adopted as yet. (e) No. (f) Yes.

8. The reporting of infectious diseases, and the use of water from wells in our city.

9. I think there is.

10. Privy-vaults and hog-pens, and their contamination of well-water and its use by some of our citizens.

P. S. Our board of health may well be said to be in an embryotic condition, with prospects of maturity in the future.

MARIETTA.—Pop., 6,000.—Dr. C. W. EDDY, *Secretary Board of Health*.

1. We have made one fill of lot where owner refused; the others in the same locality were filled last year by our order (five in number).

2. About fifty dollars.

3. Fifty-five dollars.

4. Rather more this year than usual, but it has not been due to any fault in sanitary conditions of the city.

5. Dysentery in a mild form, when not complicated, which prevailed mostly on the highest ground in the city.

6. Scarletina, in a very mild form, but not general.

7. Isolation.

(a) Houses are not placarded.

(b) Parents are notified to keep children from school.

(c) None that I am aware of.

(d) No.

(e) We have no pest-house, but when small-pox is epidemic in other sections we always procure a house in case we do need it.

8. Trying to make people believe they are really dirty and inducing them to clean up.

9. Yes, decidedly so.

10. We have no very great evils, as the sanitary condition is very good. Perhaps a few undrained cellars have caused us the most trouble. In the spring we always send our health officer over the entire city, with instructions to go through all the alleys, and authorize him to abate all nuisances, if the property owners will not when notified to do so.

McCOMB.—Pop., 1,400.—DR. JNO. A. THOMPSON, H. O.

Our board was organized on July 12, 1888.

1. Very little, except abatement of a few nuisances.

2. Nothing but a little expense attending the organization of the board.

3. Fifty dollars per annum.

4. Rather more.

5. None since organization of board.

6. Very slightly. Scarlet fever, in a moderate form, is now with us, whooping-cough has just been introduced from Portage, Wood county.

7. Notification is required, but physicians have not responded very promptly; no houses have been placarded as yet. School superintendents are notified to exclude pupils from infected houses, and are again notified to re-admit. We have no pest-house.

8. Notification of contagious diseases; management of privies; have also had some little conflict with cemetery trustees in regard to burials.

9. Am not as yet able to state.

10. Improper location of water-closets and want of cleanliness therein. Our water supply must necessarily suffer in the very near future. Hardly think the regulations adopted by the board will be sufficient to ward off the danger impending from this source.

MIAMISBURG.—Pop., 3,000.—H. SCHOENFELD, JR., H. O.

1. The removing of nuisances and inspection of private and public buildings, and remedying anything found not to be in good sanitary condition.

2. About three hundred and twenty-five dollars.

3. One hundred dollars.

4. About an average with other years.

5. Have not had an epidemic of any disease.

6. To a very limited extent.

7. By a positive quarantine of the house, and a proper disinfection of the same.

(a) Yes.

(b) By notifying superintendent of schools and by notice given to parents to keep children.

(c) By certificate of attending physician.

(d) No.

8. The reporting of births and deaths and of contagious and infectious diseases.

9. Yes.

10. Bad vaults, and this is improving very fast, and non-compliance of doctors in reporting contagious and infectious diseases.

MIDDLETOWN.—Pop., 8,200.—DR. JOHN T. SUTPHEN, H. O.

1. We have organized a complete board of health, consisting of six members. We keep a complete set of vital statistics, causing reports of all contagious diseases to be made immediately. We employ a sanitary inspector, whom we pay \$1.50 per day, whose special instructions are that he shall investigate everything detrimental to the health of the citizens, and report to the health officer, when orders are issued with reference to the complaint made.

2. The entire expense of the board of health, including printing, postage, etc., last year, was \$527.

3. Salary of health officer is \$100.00 per annum; the clerk, \$50.00 per annum.

4. The amount of sickness was greater this year than last, to be accounted for, especially, on account of the epidemic of diphtheria.

5. We have had but very little typhoid-fever, but have had an epidemic of diphtheria. During the month of October the cases of diphtheria were very malignant in their character, but later cases have been of the milder type.

6. Infectious diseases have not been excessive.

7. Immediately upon receiving notice of contagious or infectious diseases, persons residing in the house are prohibited from commingling with other citizens. Children are prohibited from attending public and private schools, and none are readmitted to the schools except on order of the health officer. We have no pest-house. The sanitary inspector looks after and superintends the disinfection of houses. We have not done as much work under our board as probably should have been done, but are retarded on account of the city council not being liberally inclined toward the board of health.

8. Each year the orders of the board are more generally complied with than have been in previous years.

9. Yes.

10. The open vault system; but by the close of this year that will be remedied to a great extent, in the populous portion of the city, by sewerage, by which time we will have about three and one-half miles of sewerage.

MILFORD.—Pop., 1,000.—OTTO PALM, SR., M. D., H. O.

Your request to answer some questions, in regard to the sanitary work of our board of health, and myself as health officer, came to hand, and I must say in reply that the board for Milford corporation was appointed in November and organized during the last fourteen days, I think the second Tuesday in December.

In regard to my appointment, as yet I have not been officially informed, but saw it only in the report of our paper, the *Valley Enterprise*. For my part I beg to inform you that I am not willing to accept the appointment, because I experienced such disappointments three years ago, by serving as a member of the board of health of this corporation, that I am forced to refuse.

I would and could herewith close my letter, but as you ask for some information of the achievements of the local boards of health, and in-so-far as it may guide the State Board of Health, by recommending better legislation, I give you a few of my experiences.

In the beginning I observed that the majority of the people cannot and will not see the usefulness of a board of health, and after the creation of our board, and the first inspection of the town, by the board *in corpore*, the people called the board a "smelling committee," and did not give any attention to our notices at all; and after a good many suits against the offenders, the council, consisting partly of the same kind of people, threatened to abolish the board. The result was that the members of the board of health, consisting of the best people of this corporation, resigned at once. I, as a committee,

acting as health officer, received no remuneration whatever for my trouble in the courts; and I paid my lawyers in the bargain.

Some people reading this may say that the board we are speaking of was too severe and strict, and that there may have been too much ado about nothing; but every reasonable-thinking man, who has an idea of the term nuisance, would say that there were many nuisances, because you could find —

1. Overflowing privies, flowing down the lots, over the side walks, into the street-gutters.

2. Instead of hog-pens, stinking-hog-pools.

3. Some butcher-shops, on Main street, which had their slaughter-houses on the same lots, and which were kept so dirty that everybody could smell them two or three squares before reaching them.

4. Alleys full of manure, not cleaned for years.

5. An abandoned mill-race in the middle of the town, filled up at the mouth, and collecting all the dirty water from the gutter of the streets, in the summer-time becoming a stinking puddle, covered with green duck-weed; besides this, they used it to drown newborn cats in, and sometimes there were dead hogs and dogs floating on the surface.

That there were a good many cases of typhus and malaria is evident; sometimes 30 to 40 in one year, in a population of 600 or 700; but that the race was the cause of such a plague, the common people could not see.

If, in a town like this, a plague, such as yellow-fever or cholera, should appear, what would become of it?

There is only one remedy, and that is that the law be changed and that the board of health be made a self-governing board with —

1. A right to levy taxes.

2. Its own treasurer.

3. With authority to appoint a health officer, who must be a physician in good standing, sworn to do his duty, and be punished for refusing, and who shall get such salary as circumstances permit.

4. That the health officer has the right to appoint a police, or the marshal of the town, for his assistant.

These are some of a good many laws I would ask for. Is health less important than education? Not at all. Better healthy than wise and wealthy.

MONROEVILLE.—Pop., 1,500.—DR. J. T. GILL, H. O.

1. We have not done much sanitary work in our town, but we have had removed quite a number of manure heaps, pig-pens and privies; also had quite a number of cellars drained.

2. About twenty-five dollars.

3. No fixed salary.

4. Much less than last year.

5. No epidemic disease.

6. None.

7. No occasion offered.

8. Keeping stable-yards and pig-pens clean has given us some trouble.

9. Yes.

10. The wells from which water is used for drinking purposes being too near to privies. Damp cellars are our worst evil.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

MT. GILEAD.—Pop., 1,800.—A. E. YOUNG, H. O.

1. In the spring we had small cards printed and distributed to every residence and place of business, directing the citizens to put their premises in proper sanitary condition within three days from date of issue, which was generally complied with; I have had but five extra visits to make through the summer. We have also had an ordinance passed requiring physicians to report contagious diseases, births and deaths; ordinance also includes undertakers and midwives.

2. Amount expended will not exceed fifteen dollars, exclusive of health officer's salary.

3. Salary of health officer is twenty-five dollars per year.

4. The amount of sickness has probably not been as great as in previous years.

5. We had some few cases of typho-malarial fever, causing two deaths.

7. We require the physicians to report and send notice to the superintendent of the public schools, giving the names of the occupants of the residence, street and number. Have had no reports yet, as ordinance has just lately been passed, and no cases.

(a) No.

(b) Superintendent receives permit from health officer.

(c) No.

(d) No.

8. Have had little or no trouble in any way.

9. Privy-vaults and improper sewerage and shallow wells.

MT. STERLING.—Pop., 900.—DR. S. McCLINTICK, H. O.

Measles prevailed in mild form as an epidemic in the town and country during the months of April, May and June, 1888.

We have had more sickness during the present season than we have had for several years, principally malarial and typhoid-fever. We have had about thirty cases of typhoid-fever in our village; most of the cases were of a grave character. Three deaths up to the present; no new cases; a few cases of relapse remain, with the prospect of all recovering.

The sanitary conditions that appeared to favor its development was want of proper sewerage and the disposition of filth and garbage in the back-yards and alleys. While we have a board of health, the citizens appear to disregard all sanitary measures recommended by the board. I know of no way of remedying the evil but to resort to legal measures.

Privies without vaults are from twenty to one hundred feet from dwellings, and wells are liable to be infected. Wells are dug from ten to twenty feet, and are filled principally with surface water.

MT. VERNON.—Pop., 6,000.—DR. E. R. EGGLESTON, H. O.

1. As ordinarily, during the month of May, our city was quite thoroughly cleaned up. There are still some objections, on the part of a class, to our methods of "interference;" but in the main, the work is fairly well done, and the people become more and more impressed with the value of it. The reorganization of the board of health under the new law has had an excellent effect, in that it has placed us in touch with other organizations of like kind, and placed us in proper relations with a central supervising authority, the State Board of Health. The new rules and officers made necessary by the change have had a salutary effect in one marked respect, in giving to people a responsible head to whom their difficulties may be referred.

The amount of work done in the way of "cleaning up" has been very large, and

has consisted of a house to house inspection, which included an examination of everything about the premises, inside and out, business blocks as well as private dwellings. The board held weekly meetings during the month, when each ward sanitary policeman was required to present a detailed report of his work, and to receive advice or instructions for its further prosecution. The system adopted for report of births is supported by the medical profession willingly, as is also that of permits for interments and disinterments by undertakers and cemetery authorities.

3. One hundred and fifty dollars per year.

4. Less.

5. During the winter and spring of 1887 and 1888 measles and roetheln prevailed extensively, in both city and country. By some practitioners the former disease was held to be an exaggerated type of the latter.

6. To very limited extent.

7. Physicians are required to report to the health officer every case of contagious or infectious disease. Dwellings in which they occur are placarded, and the superintendent of public schools, or teacher of private school, is notified to receive no pupils from that house until duly informed that it may be safely done. The disinfection of houses is left to the direction of the family physicians, who are supplied with the various formulæ for the purpose. No pest-house is kept ready for use.

8. The greatest obstacles met with are in relation to orders to clean up, and in a large number of cases legal steps have had to be taken to enforce them.

9. The interest in sanitary reform certainly increases, but slowly.

10. Carelessness about cleanliness of premises, unsafe wells, and bad ventilation.

NEW CARLISLE.—Pop., 1,600.—H. H. YOUNG, H. O.

1. Our board was organized August 16, 1888. Health officer elected and qualified August 18, 1888. Have done little beyond distributing laws enacted by board of health.

2. Have done nothing and expended nothing.

3. Fifty dollars per year.

4. About the same.

5. No.

6. Have had but little since date.

7. Health officer is notified by physicians of presence of infectious diseases. Superintendent of school is notified of the fact. All members of infected families are barred from school, and are not readmitted until health officer certifies safety. Disinfection is in hands of health officer; also fumigation in private houses. Material for disinfection and fumigation is furnished by board of health. No pest-house.

8. Health officer has found greatest obstacle in enforcing burial regulations.

9. Is too recent to observe much growth. Think there is some.

10. The fact that many of the lots are honey-combed with disused privy-pits that have been covered up, contents remaining.

NEW HOLLAND.—Pop., 700.—DR. W. S. SCURLOCK, H. O.

1. We have merely begun. We have ordered streets thoroughly cleaned, by property owners or renters, on the streets and alleys adjoining property, ordered hog-pens removed, etc.

2. There has been none as yet, by the town, exclusive of street cleaning.

3. The board has not yet determined what shall be paid health officer.
4. About the same as previous years.
5. There has been no epidemic, this fall, in our town.
6. There has been very little. We had one case of measles, also one of diphtheria.
7. The board ordered health officer to notify parents not to send children to school who had been exposed to measles. Also ordered superintendent of public school not to admit said children until they had a permit from health officer. In this way the disease did not spread. There has been none received except that in my own practice. I do not know of any other cases which could have been reported. Houses have not been placarded. The board has not superintended the disinfection of private houses. There is no pest-house. There has been some antiseptic precautions taken, but no disinfection carried out thus far, except washing of clothes, etc. Children who have not had the disease have been ordered to occupy other rooms.

8. The removal of the hog-pen nuisance has not been effected. The man who owns it says he will not move his hogs until he butchers them. He got his orders as board instructed health officer. The board has not met since, and I do not know what steps will be taken.

9. I believe there is, with exceptions, of parties who will be at some expense.

10. There is a body of water, stagnant throughout the greater part of the year, east of town, or at east side of town. Also too many hog-pens which are not well kept, together with some lack of drainage, etc.

NEW PHILADELPHIA.—D. KORNS, *Mayor*.

We have no board of health at this place. We send special police around our village and have everybody clean up about twice a year. We pay them for only the actual time they spend, and then they are discharged.

NEW LEXINGTON.—Pop., 250.—D. M. REA, H. O.

1. Since May, 1888, we have removed forty-seven nuisances, such as privy-vaults, cess-pools, etc.
2. None except salary.
3. \$72.00 per year.
4. About the same.
5. None.
6. None.
8. None.
9. Yes.
10. Privy-vaults and garbage.

NEW LISBON.—Pop., 2,750.—DR. F. GRAHAM, H. O.

1. Our work has been confined almost exclusively to abating nuisances, such as foul privy-vaults, garbage, etc.
2. The citizens are compelled to abate nuisances on their own premises at their own expense.
3. \$25.00 per month. The clerk receives \$15.00 per month.
4. There has been less sickness during the past two years than formerly.
5. No prevailing disease during the last few years.

6. Only about six cases each of diphtheria and scarlet-fever in two years. Three cases typhoid fever.

7. Absolute isolation, disinfection, employment of nurses, etc. Notification has been received, but only since November 1 have we decided to placard houses.

8. There has been no rule of the board but what has been enforced. We don't allow trouble to arise.

9. There is a general feeling that the work performed by the board is beneficial.

10. Slaughter-houses, privy-vaults and imperfect sewerage. Our sewers were built without traps and catch basins.

NEW LONDON.—Pop., 1,100.—J. F. ALLEN, H. O.

1. Our board of health was organized in June, 1888, since which time we have been very busy at sanitary work. The amount of work has been large, for so small a town, consisting of the removal and cleaning of vaults, unearthing improperly buried deposits, removing privy-vaults a proper distance from wells of drinking-water, changing from earth vaults to boxes or drawers, and the removal of hog-pens from the town; they had become so offensive that it was a godsend to create a board of health. The filling up of lots upon which water become stagnant, and filled with putrid matter and garbage of all kinds.

2. Seventy-five dollars.

3. \$10.00 per month from April 1 to November 1; \$5.00 per month from November 1 to April 1.

4. The health of the town is certainly much more encouraging; at least physicians tell me so.

5. We have had no epidemic.

6. Very few infectious diseases.

7. Scarlet-fever, and, in fact, all infectious diseases, are carefully guarded. Houses are placarded at once. No visitors permitted without permission of health officer. Children are kept from school by notice served on the parents, and the superintendent of schools notified to admit no person from the infected house until a physician's certificate is procured. The health officer attends to disinfection. We have no pest-house.

8. Removal of nuisances such as privies. Lots upon which people generally throw rubbish and decayed vegetables. There is now a bright interest in the actions of the board.

9. Privy-vaults as they have been in the past. I found, on inspection, that we have a number of privies dug to the depth of four or five feet, and into running water. The proprietors of these places thought they had a good thing, for the deposits were absorbed by the water and carried off, thereby creating an unhealthy water supply. Where they were the most dangerous I had them promptly filled with earth, after disinfecting them. The accumulation of filth and stagnant water on vacant lots, the permission of small hog-pens near dwellings, and improper sewerage.

We are working hard to bring our town to a good, healthy condition, and in a short time we will have no place for disease to hold to, although we have much to do yet.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

NEW MATAMORAS.—Pop., 600.—DR. W. S. WEST, H. O.

1. Very little work has been done.
2. About \$75.00.
3. No salary.
4. About the same.
5. No epidemic.
6. None.
8. No obstacles.
9. Yes.
10. Hog-pens.

NEW PARIS.—Pop., 1,200.—DR. A. M. JONES, H. O.

In reply to your list of questions to health officer, under date of 31st inst., I have to reply that our board is only just organized, and nothing has as yet been done. This village has good water and excellent natural drainage, and I do not think our duties will be very onerous. At present there is an unexampled healthfulness both in village and country. I made no report to you last week and shall have none to make this week.

NEW RICHMOND.—Pop., 3,000.—DR. T. J. MULLEN, H. O.

1. Cleaning hog-pens; cow-houses and privies.
2. About \$15.00.
3. \$50.00.
4. Less.
5. None.
6. Throat troubles,—in some few cases amounting to diphtheria,—from which there has been seven deaths from the first of June to the present time. Many cases reported that were mild cases of tonsilitis.
7. We require all such cases reported to health officer by attending physicians, and require them to see that proper disinfection and fumigation is attended to. Children, or those from infected houses, are prohibited from attending school until all cases of sickness have ceased. Houses, children and clothing are disinfected, and children remain at home for ten days after all sickness. In case of death the undertaker attends to thorough disinfection and fumigation. No pest-house.
8. The reporting of cases by physicians.
9. I think there is.
10. Privies, hog-pens and cow-houses.

NEW STRAITSVILLE.—Pop., 3,000.—J. H. ROSS, H. O.

You are aware that socialism originated in Europe. We have some of that element here; they do not like law and order. Some of our Americans also lean that way. One undertaker conducted two burials without a permit. I spoke to him, and he said ——— if he was going to run around to get a permit. I went to the mayor to get law, and he said he wanted to go to Logan first to see a lawyer.

I would urgently insist that it be lawful for the board to appoint one of their number president of the board, subject to removal, and make a penalty for absence, at regular meetings, without lawful excuse. I also think it very advisable that the board should receive compensation, as some will receive benefit who will never have to serve on the

board. Think of a prominent merchant ordering the board off his premises, threatening to shoot anyone coming on his premises! He told two men, whom I had employed to remove a nuisance arising from a privy-vault overflowing, that he would shoot the first man who went to dig there. I hope things may change.

NEVADA.—Pop., 1,500.—DR. WM. L. BLAIR, H. O.

1. Our local board of health has only recently been organized, and since its organization, and also before, there has been no special work to be done by the board.

3. The salary of the health officer has not been fixed.

4. The amount of sickness in our village has been very small during the past year—less than usual.

5, 6, 7. We have had no epidemic, and no infectious diseases, except a few cases of whooping-cough and of chicken-pox (varicella). As there have been only a few cases, and they have been very mild, and as physicians are rarely called to attend them, the board of health has taken no action in regard to them.

9, 10. The sanitary condition of our village is good, and our people have a pride in keeping their premises clean and orderly, and, as a rule, are prompt to follow any suggestions of the authorities in regard to sanitary matters.

NORTH BALTIMORE.—Pop., 1,350.—DR. J. R. ARCHER, H. O.

1. Found, and declared nuisances on several premises.

2. Not any.

3. Not a cent.

4. About the same as previous years.

5. Scarlatina simplex, with four deaths reported from same.

6. See answer 5.

7. Not any at all.

8. Cleaning premises by property-holders.

9. Not any at all.

10. Sewerage and cleanliness of premises and principal business streets.

Our board of health was organized September, 1888.

NORWALK.—Pop., 8,000.—J. A. JONES, H. O.

1. Especial attention has been given to privies, vaults, gas, putrid matter, drainage and general cleanliness of the city. Ordinances against keeping swine nearer than ten rods of habitations. Also against fertilizer. Cases of contagious diseases have been isolated, and have not prevailed.

2. From November 1, 1887, to November 1, 1888, \$118.00.

3. \$20.00 per month.

4. It compares favorably with other years, and has been rather less.

5. None dangerously. A number of cases of diphtheria in a mild form, and measles to some extent, is about all. Some typhoid-fever has been reported.

6. Very limited.

7 (a). Yes.

(b) Children from infected houses are ordered to be kept at home, and teachers are required to enforce the order as to schools.

(c) Doctor's certificate.

(d) No.

(e) Yes.

8. No very special trouble.

9. Yes.

10. Lack of sufficient sewerage and imperfect supply and quality of water, in dry-times, from water-works.

OAK HARBOR.—Pop., 1,500.—DR. J. M. STEWART, H. O.

1. We organized a board of health on or about September 7, 1888. We have done some sanitary work by way of cleaning sewers, cleaning alleys and looking after garbage in cellars.

2. Time thus expended is somewhat indefinite.

3. Health officer's salary not yet stipulated.

4. We have had less sickness during the last year than any previous year in the history of our village.

5. We have had no contagious disease for the last six months.

6. The board of health proposes to enforce rigid sanitary laws. We have already adopted, with some modifications, the rules recommended by the State Board of Health.

7. As yet we have not met with an obstacle to this enforcement.

8. There seems to be a recognized growth of interest among our citizens in matters of sanitary reform.

9. The greatest sanitary evil in our place is a lack of proper sewerage.

OBERLIN.—Pop., 4,000.—T. R. MAYHEW, H. O.

1. Amount of work not large. Character, cleaning streets, drainage and regulating privies.

2. About \$40.00.

3. \$2.00 per day when on duty.

4. About the same.

5. Not to any extent.

6. To no extent.

7. Have not had need to resort to measures. No pest-house. Nothing done.

8. In suppressing and regulating slop-drains.

9. I think there is.

10. Want of drainage.

OTTAWA.—Pop., 2,000.—DR. C. E. BEARDSLEY, H. O.

1. We have endeavored to have privies, alleys and cess-pools cleaned, as well as the removal of all garbage, and the drainage of stagnant pools and surface-water.

2. Perhaps two hundred dollars; not one cent from public treasury.

3. Not one dollar as yet; it rests with the board to pay or not to pay a salary.

4. There has been less sickness up to this date than in previous years.

5. Typhoid-fever epidemically, principally in the country, some cases in town; nothing remarkable in its history. No deaths in town from it.

6. We have been singularly exempt from infectious diseases. One case of scarlet-fever reported; no isolation of members of the family, and no more cases; therefore, we concluded it was nothing but a case of erythema.

7. In the above case, we placarded the house. The above case is the only one reported, or placed under restrictions. The board does not superintend anything. There is no pest-house.

8. To enforce any of the rules and regulations of the board (per copy enclosed), we have met almost insurmountable obstacles.

9. No; they have not been educated up to a sanitary standard.

10. *Sanitary ignorance*, the opposition manifest by the medical profession as well as the citizen; cleanliness and the water supply.

Our board has not been organized six months, and it is something new to our people, a people very democratic in their views, who do not believe it to be just and right to be "sticking sanitary noses into their business." We hope to teach them, in time, that it will be to their advantage to be in accord with sanitation, and will not affect the doctor's business.

OXFORD.—Pop., 2,000.—DR. HERSCHEL D. HINCKLEY, H. O.

A board of health was organized in this village in June, but owing to delays in passing ordinances to empower board to adopt rules and regulations and in securing the necessary printing, the board did not go into active operation until in July.

1. The board has urged upon the people the importance of greater cleanliness of their premises and alleys; has placed a copy of the "Rules and Regulations" in every family in town; has abated a number of nuisances, such as dead animals, offensive pigsties, offensive privy-vaults and insecure buildings.

2. Perhaps one hundred dollars.

3. None.

4. Less.

5. None.

6. None.

7. It has not been necessary to do anything, but rules have been adopted requiring the notification of the health officer of all contagious and infectious diseases; the placarding of houses wherein such diseases exist; the exclusion of children from such houses, from the public schools, to which none shall be admitted without a permit from the health officer.

8. The greatest obstacle is the negligence of physicians to report births and deaths to this office promptly.

9. There undoubtedly is.

10. Badly constructed privy-vaults, imperfect drainage, and the pernicious practice by some of throwing kitchen slops into the back-yard. These evils, however, do not exist to any great extent, and the village is, perhaps, as salubrious as any within the limits of the State. Our death-rate will probably not exceed one-half of one per cent.

PEMBERVILLE.—Pop., 900.—E. B. MORSE, H. O.

1. We have improved the condition of privy-vaults, cleaned alleys, and the bed of the creek.

2. Seventy-five dollars.

3. To the first of January, 1889, eleven dollars.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

4. Less.
5. None.
6. None.

7. All that is in our power, by keeping clean and watching anything that occurs. We have received no notice of infectious or contagious diseases. Have had no cause to placard houses, but will if necessary. Children have not had to be kept from school as yet. Have not attempted any disinfection in private houses as yet. There is no pest-house here.

8. Keeping alleys and vaults clean.
9. Positively no.

10. The neglect of our citizens in keeping vaults and alleys clean, and the throwing of refuse matter in the bed of the creek.

PIQUA.—Pop., 10,000.—DR. E. A. KITZMILLER, H. O.

1. Cleaning of alleys, streets, privy-vaults, hog-pens removed, etc. Perhaps two hundred privy-vaults cleaned and all new ones ordered cemented.
2. Cannot give amount, as it has been paid for by property owners.
3. Two hundred dollars per year.
4. About same.
5. Typhoid-fever. Nearly all cases recovered.
6. Scarlet-fever.
7. General cleaning up. All houses placarded. Children admitted to school in reasonable time. Have no pest-house.
8. Cleaning privy-vaults.
9. Yes.
10. Privy-vaults, causing typhoid-fever.

PLYMOUTH.—Pop., 1,500.—DR. W. H. SYKES, H. O.

1. A general house to house visit and inspection of cellars, out-buildings, etc., in the spring, and a general observation the rest of the year.
2. None by board of health. We aim to see that orders to owners of property to clean up are obeyed.
3. None.
4. About as usual.
5. No epidemic. Have had several cases of typhoid-fever during months of September and October.
6. None.
7. Patients and members of families are excluded from public gatherings, and promiscuous visiting of infectious houses forbidden. School children and their clothing are disinfected. Disinfection generally by attending physician. No pest-house.
8. We have no special trouble in enforcing our rules.
9. Yes. By constant agitation of the subject for years, our people have learned to look well after their own premises in this respect.
10. Our town is situated on high ground, drained by the Huron River. Have no special sanitary evils.

PORTSMOUTH.—Pop., 14,000.—DR. J. P. BING, H. O.

1. A large number (275) of indigent sick have been treated at their homes by the health officer. Sanitary ordinances have been passed and enforced by the board of health, regulating construction and cleaning of vaults, sewers, gutters, etc., and for the removal and disinfecting of garbage, beyond the city limits. Also for proper sanitary supervision of the markets, and for the testing of milk sold to our citizens.

2. Expenses for the year: Medicine for the sick poor, \$150.00; sanitary police, \$600.00.

3. Salary of health officer, \$300.00.

4. About the same.

5. None.

6. Scarlet-fever and diphtheria prevailed during the summer months. Twenty-five cases of scarlet-fever and six deaths were reported. Three or four cases of diphtheria were reported, with one death.

7. Infectious diseases are reported to the health officer, who causes the houses in all cases to be placarded, and a special police placed, if necessary. The health officer notifies the superintendent of the schools, giving name and locality of infected persons. Those families are excluded and only readmitted on the certificate of the attending physician that all danger of infection has ceased. The family is given a leaflet of the State Board, and the attending physician is requested to supervise disinfection of private houses. There is a small-pox hospital at the city limits, always in readiness.

8. Disinclination to report contagious and pestilential diseases.

9. Yes, decidedly.

10. Popular ignorance and disregard of hygienic laws, and inattention to cleanliness of person and premises.

RAVENNA.—Pop., 4,000.—T. R. MASON, H. O.

1. I cannot state the exact amount, but it has been pretty thorough.

2. I cannot.

3. Two dollars per diem.

4. If anything, less.

5. None.

6. Not any.

7. Yes.

8. All due precaution.

We have a good, frame pest-house, situated in the woods, some three-fourths of a mile from town, and have a man who has had the small-pox living there all the year; he is an Englishman and a bachelor, and is very neat; the house is ready at all times. We have one of the best systems of water-works, but our sewerage is bad; keep improving it all the time.

8. Sewerage.

9. Yes.

10. The want of sewerage.

ROCKY RIDGE.—Pop., 600.—DR. A. E. FERGUSON, H. O.

1. Cleaning up the alleys and back-yards, where filth and rubbish is deposited.

2. Nothing.

3. None; he is paid a stated amount for burying carcasses and for serving notices to abate nuisances.
4. About the same.
5. None.
6. Not any.
8. Cutting weeds and grass and cleaning privy-vaults.
9. Yes.
10. Slaughter-house and two saloons that empty their slops in the gutter in front of their places of business.

ST. MARY'S.—Pop., 2,500.—DR. W. E. SCHOONOVER, H. O.

1. Since our organization, July 26, we have caused to be cleaned nine cess-pools, ten hog-pens, twenty-one privy-vaults, and two alleys full of garbage. People are nearly all building dry-earth closets where they are erecting new privies.

2. Perhaps not over one hundred dollars.

3. Attending each meeting of the board, \$1.00; issuing notice of nuisance, each twenty-five cents; issuing, filing and recording burial permits, each fifteen cents; recording births, each ten cents. As a whole it will not be more, perhaps, than fifty dollars per year.

4. I presume about the same. We have no exact date to go by.

5. Measles have prevailed to a great extent, but no cases have proved fatal, and nothing was done to prevent its spread.

6. Four cases of diphtheria, one death, and in the case of death, no physician was employed, and the board was not notified.

7. (a) Nearly every case is reported to the board, and when reported the house is always placarded.

(b) By notifying the family not to send them, and notifying the school superintendent not to admit them.

(c) Requiring a certificate from the attending physician that all danger of infection is passed, and notify the school superintendent of the same.

(d) No.

(e) No.

8. All are very hard; perhaps removing garbage is the hardest.

9. With a number there is, but with a greater number there is not, and quite a number oppose it.

10. Garbage, hog-pens and privy-vaults.

SALINEVILLE.—Pop., 3,000.—G. W. MORRISON, *Mayor*.

1. None done this year.

2. Not one cent.

3. Paid ten dollars per month for three months.

4. Much less.

5. Have had none.

6. To no extent whatsoever.

7. None except cleanliness.

8. We have had no occasion to enforce any particular rules.

9. I think not.

10. Have no opinion to offer.

SHAWNEE.—Pop., 4,000.—DR. C. E. WHITTINGTON, H. O.

1. Notices served on full privy-vaults, 41; filthy drains and cess-pools, 12; filthy stables and hog-pens, 6; well, 1; basements, 2.
2. None.
3. We have none.
4. Greater in consumption and cholera-morbus.
5. None.
6. Not any.
7. Had no cause.
8. Cleaning privy-vaults.
9. No.
10. Want of proper drainage.

SHELBY.—Pop., 2,500.—DR. M. T. LOVE, H. O.

1. General cleaning up and precaution against contagious diseases.
2. Not more than \$15.00.
3. None.
4. Less.
5. None.
6. Very light.
7. Search for and remove the cause wherever found. Our town is said to be cleaner than any of the neighboring towns.
 - (a) Yes.
 - (b) Parents are notified to keep their children at home.
 - (c) By order of health officer.
 - (d) Private houses have not required disinfection by the board.
 - (e) There is no pest-house.
 - (f) But little more is done than general cleaning up and keeping privy-vaults in order and wells clean.
8. Cleaning wells and privy-vaults.
9. Yes; but it requires time to educate all people.
10. No particular evil.

SOUTH CHARLESTON.—Pop., 1,400.—DR. M. H. COLLINS, H. O.

1. Streets have been thoroughly cleaned, sewers have been opened and cleaned, privy-vaults and back-yards cleaned of their filth, etc.
2. Three hundred dollars and over.
3. Twenty-five dollars.
4. Sickness a little less, I think.
5. None in epidemic form.
6. No infectious diseases.
7. All measures that can be brought into use.
 - (a) The board is notified of all infectious diseases, and houses placarded.
 - (b) By aid of school board, parents and the health officer.
 - (c) Not to admit them too early, and by order of the health officer.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

(d) Where there is a prevailing epidemic, or likely to be, the health officer is required to disinfect all houses where needed.

(e) We have no pest-house.

8. There has not been much objection raised by our citizens against the enforcement of rules and regulations of the board.

9. There is.

10. Neglecting the cleaning of night-soil and filth from the back-yards and alleys.

SPRINGBORO.—Pop., 500.—DAVID MERING, H. O.

1. Keeping streets, cellars, wells, stables and manure-piles cleaned up.

2. Very little money expended. Work done by property owners.

3. No regular salary. \$1.50 per day for time employed.

4. Less.

5. None.

6. None.

8. Cleaning of privies.

9. No. But there is very little opposition to health officer.

10. Wells.

SPRINGFIELD.—Pop., 40,000.—DR. HENRY M. SEYS, H. O.

Board organized for this city June 5, 1888.

1. Since that date we have directed the cleaning of one hundred and fourteen privy-vaults, ordered ninety-eight privy-vaults disinfected; ordered forty-eight general nuisances abated, such as soap-factory, slaughter-houses, pig-pens, etc.; dead animals removed from city limits, eighty-four; removed from streets, one thousand, four hundred and fifty barrels of garbage; same disposed of by thoroughly plowing under daily.

2. Amount expended to date for sanitary purposes, nine hundred and sixty-two dollars.

3. Two hundred dollars per annum.

4. We have reasons to believe that sickness of all kinds has decreased.

5. There has been no general epidemic since organization of board.

6. Since June 5th, thirty-four cases of diphtheria have been reported—with eleven deaths. I am satisfied that there has been a much larger number of cases than has been reported. Number of deaths is correct. Ten cases of scarlet-fever reported. No deaths. Fourteen deaths have been reported from typhoid-fever.

7. Isolation, mainly.

(a) Houses are placarded after notice given to board of infectious disease.

(b) By orders from attending physician.

(c) Can return to school only on certificate from attending physician.

(d) No.

Cannot answer as to what is done. Have reason to believe that, as a rule, very little is really done.

8. Have had little or no trouble. The prompt arrest and punishment by fine of two or more parties, for not obeying orders, broke down all opposition to obstruct the work of the board.

9. Yes.

10. Entire absence of any proper sanitary sewerage, and the use, in many parts of the city, of well water.

STEUBENVILLE.—Pop., 15,000.—DR. A. A. ELLIOTT.

1. An inspection of the city was made in June, and some of the worst evils abated.
2. About fifty dollars.
3. We have neither a board of health nor a health officer.
4. About the same.
5. There has been no epidemic.
6. Some typhoid-fever. Not prevailing.
7. Answered in 3. Nothing is done, only the school board does not allow the attendance of children from families where there is contagious disease.
8. All of them.
9. No.
10. Want of sewers and sewer connections.

TOLEDO.—Pop., 80,000.—DR. G. A. COLLAMORE, H. O.

1. See annual report for 1887.
2. See annual report for 1887.
3. One hundred dollars a month.
4. Rather less, in proportion to population.
5. Scarlet-fever rather extensively, in a mild form, and measles quite generally; the latter has now nearly ceased.
6. Besides the above, a moderate amount of diphtheria and typhoid-fever.
7. Notification of scarlet-fever and diphtheria is required and houses placarded; children kept from school by orders of health board and board of education; re-admitted to school usually on order of attending physician; board sometimes, not usually, superintends disinfection in private houses, always gives printed instructions how to accomplish it; there is a pest-house always ready.
8. All rules are enforced without great difficulty; the police court gives all required support.
4. Should so consider.
10. The disposal of garbage and night-soil gives most trouble.

URBANA.—Pop., 8,000.—DR. S. M. MOSGROVE, H. O.

1. The employment of one sanitary policeman for five months, during summer, who inspects vaults, pig-pens and slaughter-houses.
2. Between two hundred and two hundred and fifty dollars.
3. Nothing appropriated. Twenty-five dollars per year as clerk of board.
4. Less.
5. None.
6. Comparatively none.
7. (a) Notification by attending physician or family. I tried placarding houses two years ago, and had such a hornet's nest about me I was glad to desist.
 (b) By notification of superintendent or teacher.
 (c) Admitted to school on certificate of attending physician.
 (d) No.
 (e) None; board talked of erecting a pest-house two or three years ago, and were intimidated by threats of its being burned down, etc. And our infirmiry directors would not allow one on infirmiry farm.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

8. Placarding houses containing infectious diseases.
9. Not to any great extent.
10. Want of sewers—privy-vaults, pig-pens and slaughter-houses.

VERSAILLES.—Pop., 1,900.—DR. W. H. RICE, H. O.

1. Our board was organized June 16, 1888. Our work so far has been mainly confined to removing and disinfecting foul privy-vaults, hog-pens, and cess-pools, and building a stone sewer 600 feet in length (and costing about \$600), for drainage of low places in town.

2. I cannot.

3. Twenty-four dollars per annum.

4. With exception of typhoid-fever, less.

5. Along one street, and extending a less distance than two squares, there were fourteen cases of typhoid-fever, and one death. Wells in this part of town are shallow as a rule—lots 50 x 100 feet. Had privy-vaults disinfected with fresh lime and copperas, etc. In another part of town there were six cases all using water from the same well; one death.

6. None except three recent cases of chicken-pox.

7. Not tested.

8. The cleaning of privy-vaults and hog-pens.

9. No—not even among some of the medical profession.

10. Privy-vaults—the town being largely underlaid with gravel. In the north and west part of town (unless water-tight), they ought to be abandoned for dry earth closets. Our citizens have the habit of throwing manure, garbage, etc., in the alley ways, and waiting the pleasure of the farmers to haul it way.

WARREN.—Pop., 8,000.—DR. S. H. SMITH, H. O.

1. The board has assumed the control of all privies and water-closets. Does not allow one cleaned, removed or built except under the supervision of the sanitary policeman, and according to specifications of the board.

The board has bought a dumping ground of ten acres outside of the city limits, and an outfit, consisting of a wagon, barrels, and all the utensils for the removal of night-soil, and has given a contract for the removal of all such matter by the yard, and do not allow any other person to handle it, except by special permission.

An ordinance has been adopted prohibiting all hogs in the city after January 1, 1888, and not allowing one kept within the city limits more than 48 hours for any purpose.

This ordinance has been carried to the circuit court, and is held to be valid and constitutional. All noxious weeds were ordered cut and burned, and this has been enforced.

Over 120 complaints of nuisances have been investigated, and most of them have been abated without litigation. Some of the work has been done by the board and charged upon the tax duplicate to the property benefited.

2. About \$900, including the dump-ground, which cost \$500.

3. Not a cent.

4. About the same as other years.

5. No epidemic.

6. Very few cases.

7. Notification is made imperative. Houses are placarded with warnings; children from infected houses are not allowed to attend school, church or other public gatherings.

The board has never superintended the disinfection of private houses. The health officer has done it, and all cases attended by himself.

The pest-house is now being repaired and put in a condition to be used if required.

8. Several, but public opinion has been with the board, and it has not amounted to much.

9. There is.

10. The mouth of the sewer under the main bridge across Mahoning river, in the center of the city.

WASHINGTON C. H.—Pop., 5,200.—J. M. EDWARDS, H. O.

1. Our board was organized in July last. We have abated many nuisances.
2. None.
3. The board has not yet fixed the salary.
4. About the same.
5. None except measles. Twenty cases.
6. See 5.
7. Have had no occasion for rigid means.
 - (a) Notice is given and houses placarded.
 - (b) Superintendent of schools notified.
 - (c) Readmitted when physician's certificate is produced.
 - (d) Had no occasion to disinfect.
 - (e) No pest-house.
8. Many of our physicians refuse to report births.
9. Yes.
10. Water-closets and other filth that may render the water impure.

WASHINGTONVILLE.—Pop., 1,400.—DR. O. A. RHODES, H. O.

3. Fifty dollars.
4. Greater.
5. Diphtheria and typhoid-fever.
7. Strict measures.
9. Yes.
10. Bad water.

WAUSEON.—Pop., 2,200.—DR. L. E. MILEY, H. O.

1. Looking after alleys, vaults, cess-pools, pig-pens, etc.
2. Nothing expended.
3. None.
4. About the same.
5. No epidemics.
8. Removing pig-pens.
9. Yes.
10. Pig-pens and vaults. They cause bad water in wells.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

WEST LIBERTY.—Pop., 850.—DR. BEN. S. LEONARD, H. O.

1. Our board is just being organized, and therefore there has been no work done by the board.
2. Nothing.
3. Not decided.
4. Less.
5. No epidemic of any kind.
6. Very small.
7. None. There is no pest-house.
9. Yes.
10. Contamination of water supply.

WEST MENTOR.—Pop., 1,000.—DR. L. H. LUSE, H. O.

1. Only organized the first of November, 1888.
2. None.
3. Nothing as yet.
4. Less than former years.
5. No prevailing disease.
6. Only two cases of diphtheria; neither fatal.
7. None necessary as yet. Kept children from school.
8. All rules are enforced.
9. Yes.
10. Our village is free, being a country village.

WEST MILTON.—Pop., 1,000.—DR. J. W. TUTHILL, H. O.

Our board of health is not yet in working order. I was appointed health officer about a month ago. We have not received our blanks yet. Have ordered them, and hope hereafter to report to you regularly. There have been no births and but two deaths this month, one from pulmonary consumption and one from old age.

1. No work done.
2. No expenses.
3. Salary not fixed.
4. Less than last year.
5. Mumps. About one hundred cases in our schools this fall.
6. Have been none.
7. No measures as yet have been instituted. When properly organized we will be governed by the law as you sent it to us.
8. Have not attempted to enforce any rules as yet.
9. There is.
10. Bad water.

WESTON.—Pop., 1,000.—DR. E. W. SCHOOLEY, H. O.

1. Cleaning up back-yards, alleys and streets.
2. Nothing; citizens ordered to take care of their premises and streets and alleys adjacent.

3. No salary.
4. About the same.
5. None.
6. Ten cases of diphtheria in the last ten months, one death.
7. All physicians are order to reported all cases of contagious diseases to the health officer. He attends to disinfecting the houses wherein such diseases exist.
8. Keeping the premises around stores clean.
9. Yes.

WHITE HOUSE.—Pop., 600.—DR. F. M. HEATH, H. O.

1. Privy-vaults, hog-pens, old cellars and alleys were cleaned and kept in good sanitary condition.
2. About twenty dollars.
3. No stated salary.
4. Less.
5. None, with the exception of whooping-cough.
6. One case of diphtheria, complicated with bronchitis, in child two years old, which proved fatal.
7. All physicians must report at once any disease, or cases, coming under their observation classed as contagious. Complete isolation enforced by the board of health.
 - (a) Notification received and houses placarded.
 - (b) By order of the board of health.
 - (c) Only by order the board.
 - (d) Yes.
 - (e) No.
8. Placing privy-vaults and cellars in good sanitary condition.
9. Yes, decidedly.
10. Slops and refuse matter at back-doors, and in vicinity of wells.

WINCHESTER.—Pop., 800.—DR. W. A. McCLAIN, H. O.

1 and 2. Will say, our board was organized last May. The work done has been principally in the way of cleaning cess-pools and foul drains, and decaying material from back-yards. In every instance the parties notified obeyed promptly, but when they failed the board proceeded.

3. No salary.
4. So far as I can learn, it has been less.
- 5 and 6. Whooping-cough and chicken-pox, both appearing in mild form. No death from either. During the summer season quite a number of cases of flux developed, assuming almost the form of an epidemic; several deaths occurred.
7. Houses are ordered disinfected, and isolation practiced as far as possible under the circumstances. Principals of schools are notified, and pupils only permitted to return by order from the health officer.
8. The cleaning of back-yards.
9. Decidedly, yes.
10. Imperfect privy-vaults, and consequent contamination of water supply.

WELLINGTON.—Pop., 2,200.—DR. J. W. SMITH, H. O.

1. Abatement of water-closet nuisances and drainage by covered tile or sewer-pipes of offensive accumulations in earth.
2. Probably about three hundred dollars.
3. No fixed salary, but payment according to labor performed.
4. About the same. Small amount.
5. No epidemic disease.
6. Very limited.
7. No occasion for much restriction. Notification of infectious diseases is given; when children might carry such they are kept from schools and other public places by their presence being forbidden by health officer; the parents of such are made to understand this. There is no pest-house here.
8. Removal of garbage and disinfection of private premises.
9. There is.
10. Want of drainage, and comprehension of sanitary necessities.

WILLSHIRE.—Pop. 800.—DR. J. F. SHAFFNER, H. O.

1. We have policed the town from filth and garbage.
2. Very little.
3. Nothing.
4. A great deal less; this year we have been almost exempt from sickness of any kind.
5. None this year.
6. None.
7. When we have any of them we quarantine closely.
8. Orders of the health officer are enforced by the village council.
9. Yes.
10. Filth arising from the St. Mary's, river; also badly-kept privies.

NOTE.—The figures beginning paragraphs refer to questions in circular printed on page 31 of this Report.

Dissemination of Information.

The act creating the State Board of Health says :

“The State Board of Health shall have the supervision of the interests of the health and life of the citizens of the State. They shall make a careful inquiry in respect to the causes of diseases, and especially the invasion or spread of any infections or contagious, epidemic, or endemic disease, and shall gather information in respect to such matters and kindred subjects for dissemination among the people.”

This, the principal duty with which the Board has been charged, has been carried out to the best of our ability, with the appropriation given us. The *gathering* of information has just been considered. It has been disseminated as follows :

Weekly reports from correspondents of prevailing diseases, and those from health officers of infectious diseases, are published in the Weekly Health Bulletin, which has been regularly mailed to newspapers, journals, health officers, etc., as heretofore. We now publish in the bulletin the places from which diphtheria, typhoid-fever and scarlet-fever are reported, giving the number of cases and deaths reported by health officers, which includes all cases occurring in their respective towns.

These reports, as has been repeatedly testified by the health officers and physicians, are valuable as indicating the location of these three dangerous communicable diseases. When reports from health officers become more general we will be able to add to the value of the bulletin in this respect.

The list of towns furnishing monthly reports of deaths and their causes has already been given. These reports are tabulated and published monthly in the *Monthly Sanitary Record*.

This is a sixteen-page journal, published at the office of the Board, and entered at Columbus as second-class matter. We are now publishing two thousand copies monthly, which are sent to the health officers and members of all local boards of health, to members of the legislature, to regular correspondents, to newspapers, sanitary and medical journals, and to other State Boards of Health. The remaining copies are distributed among various classes of people, such as ministers, doctors, superintendents of public schools, etc.

In addition to the mortality report of towns, we publish in the *Record* a monthly health bulletin giving the prevailing diseases as reported by weekly correspondents and health officers, and also a State summary of meteorological observations furnished us by the Ohio Meteorological Bureau; in the latter report is incorporated observations for ozone made for us by observers of the Bureau.

The *Record* was commenced in January, 1888, and has been published monthly since that time.

ESTABLISHMENT OF LOCAL BOARDS OF HEALTH.

In May, the following circular letter, blanks and rules and regulations for local boards of health, were sent to the mayors of all incorporated cities and villages not having boards of health, and to the health officers and boards of health already established.

As it was impossible to learn what villages had been incorporated since 1880, copies were also sent to all unincorporated villages of over two hundred inhabitants. In all, copies were sent to 718 cities and villages.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, OHIO.

To the Mayor and Members of Council:

DEAR SIRS: We send you enclosed a copy of Rules and Regulations for Local Boards of Health, which we recommend for your adoption. We add here a few suggestions on

HOW TO ORGANIZE A BOARD OF HEALTH.

The council of each city and village of over 500 inhabitants is now required, and should, at its next regular meeting, provide by ordinance for the establishment of a board of health.

We call your attention to the following amendment of the law for the establishment of boards of health, passed March 3d, 1888:

Be it enacted by the General Assembly of the State of Ohio, That sections 2113 and 2115, and as amended by the act of May 17, 1886 (vol. 83, page 174, O. L.), be so amended as to read as follows:

SEC. 2113. The council of each city and village having a population of five hundred or more shall establish a board of health; such board shall be composed of the mayor, who shall be president by virtue of his office, and six members to be appointed by the council, who shall serve without compensation, and a majority of whom shall constitute a quorum. Provided, that none of the provisions of this section shall apply to cities of the first grade of the first class.

SEC. 2115. The board shall appoint a health officer, who shall furnish his name and address and such other information as may be required by the State Board of Health; and may appoint a clerk, as many ward and district physicians as it may deem necessary for the care of the sick poor and such other persons as may be in need, and define their duties and fix their salaries; and all such appointees shall serve during the pleasure of the board.

SECTION 2. That original sections 2113 and 2115 are hereby repealed.

SECTION 3. That this act shall take effect and be in force from and after its passage.

ELBERT L. LAMPSON,
Speaker of the House of Representatives.
WM. C. LYON,
President of the Senate.

In accordance with section 2122 of the Revised Statutes, council should also by ordinance confer powers on the board of health "to make such orders and regulations as it may deem necessary for the public health, and for the prevention of disease," and should in addition fix a penalty for the violation of any such order or regulation made in pursuance of authority so conferred.

The following opinion has been given by the Attorney-General in regard to the force and authority of orders and regulations promulgated by local boards of health, acting under a general ordinance of council; and the relation of the mayor to the board:

ATTORNEY-GENERAL'S OFFICE,

COLUMBUS, OHIO, February 8, 1888.

H. J. Sharp, M. D., Member of State Board of Health, London, Ohio:

DEAR SIR: Yours of the 28th of January duly received at this office. * *

I have examined the matter which you have submitted to me, arising under section 2122 of the Revised Statutes and other sections relating thereto, and am of the opinion that orders and regulations promulgated by a local board of health, acting under a general ordinance of the council, have the force and authority of ordinances of the municipality, and may issue such orders concerning the preservation of the town as are necessary, in their judgment, without a special ordinance for special cases. For a general discussion of this and kindred subjects see Dillon on Municipal Corporations, 2d edition, sections 303 and 306—notes inclusive.

Concerning the question as to whether the mayor, as president *ex-officio* of the board, has a right to vote, I am not able to find that the question has ever been adjudicated; neither do I find it discussed in any text-book. I am of the opinion, however, after careful examination of the statute, that he would have a vote. * * * *

Yours respectfully,

DAVID K. WATSON,
Attorney-General.

The mayor, who is *ex-officio* president of the board of health, should call a meeting at an early date after the board's appointment, and proceed to effect a permanent organization.

By-laws may be adopted, if deemed advisable, for the government of the board, fixing time and place of meeting, and prescribing the duties of officers and appointees of the board.

The Health Officer, whose appointment is made obligatory, should be a physician. As a rule no other person is so well fitted for the duties of the office, or will perform them so intelligently.

Rules and regulations for the sanitary government of your city or village, should then be adopted. These should be adapted to the size and character of the place, but the mistake should not be made of omitting important regulations which sometimes are erroneously considered as pertaining only to the larger cities, such for instance as those requiring physicians and householders to report contagious and infectious diseases, and undertakers to secure a permit for burial.

The rules and regulations herewith enclosed and recommended for your adoption, can undoubtedly, and with great benefit, be enforced in any incorporated village. The efficiency of your board and its continued usefulness will depend principally upon the strict enforcement of its essential rules and regulations. These should be printed at the beginning of your work, and a copy given to each of your citizens.

In connection therewith, a plain printed statement of the purposes of the board, and its necessary requirements should be given, with an appeal to all good citizens to aid you in the humane effort to prevent disease and protect the public health.

A notice should be given to all physicians practicing in your city or village, that prompt reports of certain named diseases will be required; also monthly reports of all

births which they have professionally attended. Blanks should be furnished them by the board for this purpose.

Undertakers and sextons should also be notified, that it is now, by regulation of the board, illegal to inter or disinter a dead body of any human being without first obtaining a permit from the board of health. Blanks should be provided on which should be printed certain questions relative to the death of decedents, which the undertaker or sexton should be required to answer in writing, before a burial permit is granted.

The certificate as to the *cause* of a death should be secured by the undertaker or sexton, from the physician who last attended the deceased.

The board should provide itself with a proper book wherein this information, in regard to births and deaths, should be recorded.

The board should appoint one or more sanitary policemen, who should, under direction of the Board of Health, make a careful sanitary inspection of all houses, and of all public and private places in the town, and report to the board all nuisances found.

An order should be served immediately on the owner or agent of the property wherein such nuisance is found, requiring its abatement. If this order is not obeyed within a reasonable time, a second, if deemed advisable, may be given, and if this is disregarded, the board should cause the nuisance to be abated, and assess the costs and expenses of the same upon the property wherein such nuisance is situated.

The board should strictly enforce the rule requiring reports of contagious diseases, and give public warning of their existence by placarding houses in which they are reported.

We send you copies of blanks, forms, etc., that will be required in carrying out the provisions of these rules and regulations. Your board should have a sufficient number of these printed to carry on its work.

Some of the requirements recommended will bring innovations which may, at first, cause some friction; but, by keeping before the people the reasons for such requirements, and by a firm, but intelligent enforcement of them, you will undoubtedly secure the aid and support of all right-minded citizens.

The State Board will stand ready at all times to aid you to the extent of its powers, and will expect in return such assistance as you can render to it. Upon receipt of the name and address of your appointed Health Officer, we will send copies of reports, circulars, instructions, etc., issued by the State Board, which you will find useful in carrying on the work of your organization.

We trust to receive an early notification of your compliance with the law providing for the establishment of local boards of health.

For this purpose you will find enclosed a blank, which you will please have properly filled out and returned to this office.

By order of the State Board of Health.

Very respectfully,

C. O. PROBST, M. D.,
Secretary.

OHIO STATE BOARD OF HEALTH,

OFFICE OF THE SECRETARY,

COLUMBUS, OHIO.

To the Health Officer :

DEAR SIR: The law makes it your duty to furnish to the State Board of Health your name and address, and such other information as may be required.

You will please fill out the attached blank and return it to this office at your earliest convenience.

We would be pleased to receive copies of rules and regulations, and of all printed matter issued by your Board.

On receipt of the notice of your organization, we will send you blanks for reporting to the State Board, and copies of all circulars, pamphlets, reports, etc., issued by the Board.

Respectfully,

C. O. PROBST, M. D.,
Secretary.

..... O.,, 1888.

To the State Board of Health:

It becomes my duty to inform you that in compliance with section 2113 of the Revised Statutes, as amended March 3, 1888, a Board of Health was established in this by an ordinance of council, passed, 188...

The organization of the Board is as follows:

	President,
Members, {	.....

Health Officer..... Occupation Clerk.....

The Board has appointed..... sanitary policeman. Rules and regulations have been adopted.

....., *Health Officer.*

OFFICE OF BOARD OF HEALTH,

....., O.,, 18...

NOTIFICATION OF CONTAGIOUS DISEASE.

To, Superintendent of Public Schools:

This is to notify you that a case of Contagious Disease exists in the house of Mr., situated.....

You are therefore directed to exclude from your schools all children and other persons living in the house named, until such time as you may be notified by the Board of Health that such person may be safely admitted.

....., *Health Officer.*

OFFICE OF BOARD OF HEALTH,

....., O.,, 18...

CERTIFICATE OF RE-ADMISSION TO SCHOOL.

To, Superintendent of Public Schools:

This is to certify that the scholars from the house of Mr., situated, may now be re-admitted to your school, the proper precautions against transmitting the infection having been taken.

....., *Health Officer.*

No.....

HEALTH OFFICE,

....., O., 18...

To, *Owner, Agent, or Occupier of Premises situated*.....

You are hereby notified and required to have removed within days from the date of the receipt hereof, a certain nuisance on the above described property, arising from

You will be liable to prosecution and fine of dollars on failure to comply with the terms of this notice.

....., *Health Officer.*

No.....

OFFICE OF BOARD OF HEALTH,

....., O., 18...

....., having deposited in this office a proper Certificate (No.), is hereby granted permission to bury the remains of Cemetery.
 in

....., *Health Officer.*

No.....

OFFICE OF BOARD OF HEALTH,

....., O., 188...

Permission is hereby granted to
 to remove the body of.....
 from
 to

....., *Health Officer.*

No.....

OFFICE OF BOARD OF HEALTH.

....., O., 18...

Permission is hereby granted to.....
 to construct a privy-vault on his premises, situated.....
 provided said privy-vault be made in accordance with the rules and regulations of this board.

....., *Health Officer.*

CERTIFICATE OF DEATH.

1. Name of Deceased
2. Age, years, months, days,
3. Place of Death, Street, No.
4. Sex,.....
5. Color,.....
6. Social state,—Married, Single, Widow or Widower. (Cross out words not required.)
7. Occupation,.....
8. Place of birth,
9. Father's name,

10. Mother's name,
 11. Nativity of—Father,; Mother,
 12. Place of intended interment,
 13. Date of intended interment.....
 *Undertaker.*
 Date,, 18....

PHYSICIANS' CERTIFICATE.

1. Name of Deceased.....
 2. Date of Death,
 3. Duration of last illness,
 4. Cause of Death, } Remote or predisposing,
 } Immediate,
 , *Physician.*

REPORT OF BIRTHS IN, OHIO, FOR THE MONTH OF, 18.....

Name of Child.	Date of Birth.	Place of Birth. (Street and No.)	Color.	Sex.	Full Name of Father.	Full Name of Mother.	Nativity of Father.	Nativity of Mother.	Occupation of Father.

The above is a correct report of Births attended by me during the month of, 18.....

....., *Attendant.*

ORGANIZATION, POWERS AND DUTIES OF LOCAL BOARDS OF HEALTH, WITH RULES AND REGULATIONS RECOMMENDED FOR THEIR ADOPTION BY THE OHIO STATE BOARD OF HEALTH.

LAWS GOVERNING LOCAL BOARDS OF HEALTH.

HOW ESTABLISHED AND ORGANIZED.

1. In addition to the powers specifically granted in this title, and subject to the exceptions and limitations in other parts of it, cities and villages shall have the general powers enumerated in this section, and the council may provide by ordinances for the exercise and enforcement of the same.

a. To establish a board of health and invest it with such powers and impose upon it such duties as may be necessary to secure the inhabitants from the evils of contagious, malignant and infectious diseases. (R. S., Sec. 1692.)

2. The council of each city and village having a population of five hundred or more shall establish a board of health; such board shall be composed of the mayor, who shall be president by virtue of his office, and six members to be appointed by the council, who shall serve without compensation, and a majority of whom shall constitute a quorum. Provided, that none of the provisions of this section shall apply to cities of the first grade of the first class. (O. L., vol. 84, p. 59.)

3. The term of office of the members of the board shall be three years from the date of appointment, except that those first appointed shall be classified as follows: Two to serve for three years, two for two years, and two for one year, and thereafter two shall be appointed annually. (R. S., Sec. 2114.)

4. The board shall appoint a health officer, who shall furnish his name and address and such other information as may be required by the State Board of Health; and may appoint a clerk, as many ward or district physicians as it may deem necessary for the care of the sick poor and such other persons as may be in need, and define their duties and fix their salaries; and all such appointees shall serve during the pleasure of the board. (R. S., Sec., 2115.)

5. The board of health shall have power to appoint as many persons for sanitary duty as in its opinion the public health and sanitary condition of the corporation may require; and such persons shall have general police powers, be known as the sanitary police, perform such duties for the promotion of the public health, and such other duties as the board of health may direct, and shall serve during the pleasure of the board. (R. S., Sec. 2131.)

RULES AND REGULATIONS.

6. The council may grant power to the board of health to make such orders and regulations as it may deem necessary for the public health and for the prevention of disease, and such orders and regulations shall have all the force and effect of ordinances of the corporation, and the council of cities of the second grade of the first class may grant power to the board of health to employ such number of scavengers for the removal of swill, garbage and offal from the houses, buildings, yards and lots within the city as it may deem necessary. (R. S., Sec. 2122.)

ABATEMENT OF NUISANCES.

7. The board of health may abate and remove all nuisances in the corporation, and assess the costs and expenses of same upon the property wherein such nuisance is situated, which assessment, when duly certified by the president of the board to the county auditor, shall become a lien, to be collected as other taxes in favor of the corporation; compel the owners, agents, assignees, occupants or tenants of the lot, property, house or building upon or in which any nuisance may be, to abate and remove the same; regulate the construction, arrangement, emptying and cleaning of all water-closets and privy-vaults. (R. S., Sec. 2116.)

8. When any building, erection, excavation, premises, business, pursuit, matter or thing, or the sewerage, drainage or ventilation thereof, is, in the opinion of the board of health, in a condition dangerous to life or health, the board shall declare the same, to the extent it may specify, a public nuisance, or dangerous to life and health; and the board may order the same to be removed, abated, suspended, altered or otherwise improved or purified, as in the order shall be specified, and shall cause the order, before its execution, to be served on the agent, owner, occupant or tenant, or such of them as are in the corporation, and can be found. (R. S., Sec. 2128.)

9. If a party so served, before the execution of the order is commenced, apply to the board to have the order or its execution stayed or modified, it shall be the duty of the board to temporarily suspend or modify it, and to give the party, as the case, in the opinion of the board, may require, a reasonable and fair opportunity to be heard before the board, and to present proofs and facts against the declaration and the execution of the order, or in favor of its modification. (R. S., Sec. 2129.)

10. The board shall enter upon its minutes such facts and proofs as it may receive, and its proceedings on the hearing, and thereafter may rescind, modify or reaffirm its former declaration and order, and require execution of the original or of a new or modified order, in such form as it may finally determine. (R. S., Sec. 2130.)

REGISTRATION OF VITAL STATISTICS.

11. The board of health may create a complete and accurate system of registration of births, marriages, deaths and interments occurring in such corporation, for the purposes of legal and genealogical investigations, and to furnish facts for statistical, scientific, and particularly for sanitary inquiries. (R. S., Sec. 2116.)

INFECTIOUS DISEASES AND QUARANTINE.

12. When complaint is made, or a reasonable belief exists, that an infectious or contagious disease prevails in any locality or house, the board may visit such locality or house, make all necessary investigations by inspection, and, on discovering that such infectious or contagious diseases exist, send the person so diseased to the pest-house or hospital. (R. S., Sec., 2116.)

13. The owner, or agent of the owner, of a house in which a person resides who has the small-pox, or any other disease dangerous to the public health, and the physician called to attend the person so affected, shall, within twenty-four hours after becoming cognizant of the fact, give notice thereof to the Board of Health; and when a person so affected is removed to a pest-house, or hospital, the board of health is empowered to use all necessary means to restrain him of his liberty until the danger of infection, or contagion, from such disease, ceases. (R. S., 2118.)

14. Any city or village having a board of health, or "the standing committee on health, of any city or village council, who may do and perform all the duties of a board of health, as prescribed in this chapter," or a health officer may establish a quarantine ground or grounds, within or without its own limits; but if such place be without its limits, and within the limits of any other municipal corporation, the consent of the cor-

poration within the limits of which it is proposed to establish such quarantine shall be first obtained. (R. S., Sec. 2142.)

15. The board of health or the health officer may, in times of epidemics, or threatened epidemics, establish a quarantine on vessels, railroads, or any class of vehicles used for the purpose of transporting passengers, baggage or freight, may make such rules or regulations as may be deemed wise and necessary for the protection of the health of the people of the community or State. (R. S., Sec. 2143.)

16. Whenever quarantine is declared, all railroad and steamboat corporations, and the owners, consignees, or assignees of any railroad, steamboat, stage, or other vehicle used for the transportation of passengers, baggage, or freight, shall submit to any rules or regulations imposed by such board of health or health officer; they shall submit to any examination required by the health authorities respecting any circumstance or event touching the health of the crew and passengers, and the sanitary condition of the baggage and freight; and any owner, consignee, or assignee, or other person interested as aforesaid, who makes any unfounded declaration respecting the points under examination, shall, upon conviction thereof before any court or justice of the peace, be fined not more than one hundred dollars or imprisoned not more than six months, or both; and all fines thus collected, less costs, shall be turned over to the sanitary fund of the city or village where such quarantine may be established. (R. S., Sec. 2144.)

17. All rules and regulations passed by the board of health or health officer, shall apply to all persons, goods or effects arriving by railroad, steamboat, or other vehicle of transportation, after quarantine is declared. (R. S., Sec. 2145.)

18. The board of health or health officer shall be authorized to erect any temporary wooden buildings or field hospitals deemed necessary for the isolation and protection of persons or freight supposed to be infected; but such places shall be constantly guarded by a competent force of at least three sanitary officers. (R. S., Sec. 2146.)

19. The board of health or health officer may appoint, during the time of quarantine, a sufficient number of sanitary inspectors, the salaries of whom shall be fixed by the council. (R. S., Sec. 2147.)

20. In case of any epidemic or threatened epidemic, the council shall have power to borrow, until such times as the next levy and collections thereof be made, and at a rate of interest not to exceed six per cent., any sum of money that the board of health and council may deem necessary to defray the expenses of the aforesaid quarantine. (R. S., Sec. 2148.)

TRANSPORTATION OF DEAD BODIES.

21. No person shall convey a corpse to or from any city, without a permit from the board of health. (R. S., Sec. 2119.)

INSPECTION OF FOOD.

22. The board of health may appoint such number of inspectors of milk and meat, and such number of inspectors of butter and cheese, and substances purporting to be butter and cheese, or having the semblance of butter and cheese, and as many market masters and such other persons as may be necessary to carry out the provisions of this chapter, define their duties and fix their compensation; and such inspectors of milk shall keep, for public inspection, a record of the names and places of business of all persons engaged in the sale of milk. (R. S., Sec., 2133.)

23. All dairies, including the cows, cow-stables, milk-houses, and milk-vessels, the owners of which offer for sale within the limits of the corporation milk or butter manufactured by such owners, shall be subject to inspection by the inspectors, and also any manufactory of butter and cheese, or of substances having the semblance of butter or cheese, or places where such substances or either of them are sold, shall be subject to inspection by the inspectors; that officer may enter any place where milk is sold or kept

for sale, and all carriages used for the conveyance of milk within the corporate limits; and also any manufactory or place where butter or cheese, or substances having the semblance of butter or cheese are manufactured, or any place where such substances are sold or kept for sale within the corporate limits; and whenever he has any reason to believe milk found therein is impure or adulterated, or any butter or cheese, or substance having the semblance of butter or cheese found therein contains any impure, unwholesome or deleterious substance, or is being sold or offered for sale under any false or deceptive name or designation, that any butter or cheese not made from pure cream or milk, or any substance having the semblance of butter or cheese, is being sold or offered for sale without being branded or stamped as required by section 7090, he shall take specimens thereof and subject them to satisfactory tests; or, if the board of health so direct, to chemical analysis, the result of which he shall record and preserve as evidence, and a certificate of such result, sworn to by the analyst, shall be admissible in evidence in all prosecutions under this chapter, or any law of this State. (R. S., Sec. 2134.)

DUTY OF BOARD AS TO BROTHELS, ETC.

25. The board of health, in cities of the first-class, and, when empowered by resolution of the council, in cities of the second class, are authorized and directed to enter brothels and houses of assignation, and make enumerations, as often as they deem necessary, of the name, age and color of the inmates therein, and make a record thereof, in a book to be kept in the office of the board of health, open to the inspection of the members of the board, the police, and others. (R. S., Sec. 2123.)

26. When a female, under the age of eighteen years, or believed to be under that age, is found in such brothel, or house of assignation, it shall be the duty of the board of health to return her to her home, if she has a home; and if such female has no home, then she shall be consigned to the house of refuge and correction of the corporation, or such benevolent institution, established for the reformation of abandoned females, as the board of health may elect. (R. S., Sec. 2124.)

27. No such female shall be consigned to a house of refuge and correction, or benevolent institution, against her will; but in case she declines the care and protection tendered her, it shall be the duty of the board to report her to the mayor, or police court, forthwith, to be tried as a vagrant. (R. S., Sec. 2125.)

28. When a female is found in a house of ill-fame, or assignation, affected with a contagious or infectious disease, and is removed to, or if such person apply for admission to any hospital, or pest-house, for treatment, the costs of such removal, and the expense of boarding and washing, while in such hospital, or pest-house, shall be paid by the proprietor of the house of ill-fame or assignation, from which such patient is removed, or in which she was last an inmate; such payment shall be made before the patient is discharged from such hospital, or pest-house; and the expense of boarding, washing, and medical attendance, shall be a lien upon the house and premises in which such female shall have been so found, which lien may be enforced as other liens for the security of money. (R. S., Sec. 2126.)

29. If the proprietor of such house of ill-fame, or assignation, fails or refuses to pay such expense, legal proceedings shall be immediately instituted against him, and such patient shall be held as a witness in the case. (R. S., Sec. 2127.)

VACCINATION.

30. The board of health may take measures and supply agents, and afford inducements and facilities for gratuitous vaccination and disinfection, may afford medical relief to and among the poor of the corporation as, in its opinion, the protection of the public health may require, and during the prevalence of any epidemic may provide temporary hospitals for such purposes; and the said board is hereby required to inspect semi-annually, and oftener if in the judgment of the board it shall be deemed necessary, the

sanitary condition of all schools and school buildings within the limits of the corporation. (R. S., Sec. 2135.)

PENALTIES, PROSECUTIONS, ETC.

31. Any person other than an officer, who fails to faithfully comply with any of the provisions of sections 7, 11, 12, 13, 21, shall pay a fine not exceeding fifty dollars. (R. S., Sec. 2120.)

32. A person removed to a pest-house, or hospital, who willfully leaves or escapes therefrom, before the physician thereof issues a certificate of restored health, shall be fined not less than five, nor more than fifty dollars, or imprisoned not less than one, nor more than ten days. (R. S., Sec. 2121.)

33. Whoever violates any provisions of this chapter, or any order of the board of health made in pursuance thereof, or obstructs or interferes with the execution of any such order, or willfully and illegally omits to obey any such order, shall be fined in any sum not exceeding one hundred dollars, or imprisoned for any time not exceeding ninety days, or both; but no person shall be imprisoned under this section for the first offense. (R. S., Sec., 2137.)

34. If such violation, obstruction, interference, or omission be by a corporation, it shall forfeit and pay to the proper city or village, any sum not exceeding one hundred dollars, at the discretion of the court, to be collected in a civil action brought in the name of such city or village; and any officer of such corporation consenting to such violation, shall be subject to imprisonment as above provided. (R. S., Sec. 2138.)

35. Prosecutions under this chapter, and the civil action provided for in the preceding section, shall be instituted before any tribunal within the municipal corporation having jurisdiction thereof. (R. S., Sec. 2139.)

EXPENSES OF BOARD.

36. When expenses are incurred by the board of health, under the provisions of this chapter, it shall be the duty of the council, upon application and certificate from the board of health, to pass the necessary appropriation ordinances to pay the expenses so incurred and certified; and the council is hereby empowered to levy, subject to the restrictions contained in the ninth division of this title, and set apart, the necessary sum to carry into effect the provisions of this chapter. (R. S., Sec. 2140.)

ANNUAL REPORT.

37. It shall be the duty of the board of health, on or before the first Monday of March in each year, to make report, in writing, to the council of the corporation, upon the sanitary condition and prospects of such city or village, which report shall contain the statistics of deaths, the action of the board and its officers and agents, and the names thereof for the past year; and it may contain other useful information, and the board shall suggest therein any further legislative action deemed proper for the better protection of life and health. (R. S., Sec. 2136.)

RULES AND REGULATIONS

RECOMMENDED FOR THE ADOPTION OF

LOCAL BOARDS OF HEALTH.

HEALTH OFFICER.

SECTION 1. The health officer shall be the executive officer, and shall execute and enforce all orders, rules and regulations of the board.

SEC. 2. He shall investigate, as soon thereafter as possible, all complaints of nuisances reported to him or to the board, and shall take immediate measures to remove or abate the same when found to exist.

SEC. 3. He shall issue all permits authorized by the board of health, and shall see that the records of the office are properly made and kept.

SEC. 4. It shall be the duty of the health officer, within twelve hours after receiving a report of a contagious or infectious disease, to notify the superintendent of public schools of the name and residence of the patient so affected, and to have placed on the house wherein such disease is reported, a card bearing the name, in large letters, of the disease within, and no person shall remove or mar such notice without permission from the board of health.

SEC. 5. He shall make an annual report to the board of health on or before the third Monday of February each year; such report shall include a record of work performed during the year, with such recommendations for sanitary improvements as he may deem advisable. He shall also make a monthly report to the State Board of Health of all deaths, and a weekly report of all cases of contagious or infectious diseases reported to him; and shall at once notify said State Board of all cases of small-pox, cholera, or yellow-fever occurring within his jurisdiction.

SEC. 6. The health officer shall hold office during the pleasure of the board of health, and shall receive such compensation for his services as the board may stipulate.

CONTAGIOUS DISEASES.

SEC. 7. It shall be the duty of every physician or other person attending a patient suffering with diphtheria, scarlet-fever, small-pox, or other dangerous contagious or infectious disease, and of every householder, tenant or landlord in whose house such disease shall occur, to notify the board of health at once of the existence of the same, with the name and residence of the patient.

SEC. 8. No person affected with any of the diseases named in the preceding section shall be permitted to leave the house in which he or she resides or lodges, without a permit from the board of health, to be issued on receipt of a certificate from the attending physician that all danger of communicating the disease has passed; and no person residing or lodging in a house wherein such disease is present, shall attend school, church, or other public place, without permission from the board of health.

BURIALS AND BURIAL PERMITS.

SEC. 9. Persons dying of cholera, small-pox, yellow-fever, typhus-fever, scarlet-fever, or diphtheria, shall be buried or cremated as early after death as circumstances will admit; and no funeral services connected with such burials shall be held in any church, chapel, or other place of public assemblage.

SEC. 10. No corpse shall be removed for burial or cremation without a permit from the board of health; and before such permit is granted, the undertaker, sexton or other person in charge, shall deposit with the board of health a certificate, setting forth such facts concerning the decedent as may be required, including a certificate of the cause of death, signed by the physician who last attended the deceased. When a coroner's inquest has been held, the coroner shall certify to such facts; and in cases where no physician has been in attendance, the certificate shall be given by some relative or attendant of the deceased.

SEC. 11. It shall be the duty of physicians, on application of an undertaker or other person in charge of a burial, to furnish a certificate in writing of the name, residence, date and cause of death of all persons professionally attended by them during a last illness.

SEC. 12. No corpse shall be interred or disinterred in any cemetery or other place of burial within the corporate limits, nor be conveyed to or from the city (or village) without a permit from the board of health.

REPORT OF BIRTHS AND DEATHS.

SEC. 13. Every physician and midwife shall, on or before the last day of each month, report to the board of health each birth and death occurring within the city (or village), at which he or she has professionally attended, or advised; said reports to be made upon blanks furnished by the board of health, answering each requisite of such blank.

NUISANCES.

SEC. 14. No privy-vault, cess-pool, nor reservoir into which a privy, water-closet, stable or sink is drained, except it be water-tight, shall be established or permitted within fifty (50) feet of any well, spring or other source of water supply used for drinking or culinary purposes.

SEC. 15. All privy-vaults hereafter constructed shall be of stone or hard-brick, with walls and bottom not less than eight (8) inches thick, laid with full joint of cement mortar, and be cement-plastered inside, so as to be perfectly water-tight.

SEC. 16. All privy-vaults, and cess-pools, and reservoirs for the accumulation of fecal and filthy matter, shall be emptied at least once each year, and at such other times as the board of health may direct.

SEC. 17. The cleaning of privy-vaults, and the removal of night-soil, swill, garbage, and other filthy or offensive substances, shall be done only at such time and in such manner as the board of health may specify, and such substances shall not be deposited within the corporate limits.

SEC. 18. No butcher's offal, or garbage, nor any dead animals, nor any putrid or stinking animal or vegetable matter, shall be allowed to collect on the premises of any person, or be thrown or allowed to run into any street, alley, lane or place, or into any standing water or excavation within the city or village.

SEC. 19. The rendering, heating or steaming of any animal or vegetable substance, generating noisome or unwholesome odors, or gaseous vapors, shall be prohibited, unless such rendering, heating or steaming is done in steam-tight kettles or boilers, and such methods adopted as will entirely condense, decompose, deodorize or destroy the odors and gaseous vapors so produced.

FOODS.

SEC. 20. No person shall bring into this city (or village), or sell, or offer for sale, any cattle, sheep, hog, or lamb, nor any meat, fish, game or poultry that is diseased, unsound, unwholesome, or that for any other reason is judged to be unfit for human food.

SEC. 21. No calf, pig or lamb, or the meat thereof, shall be bought, held or offered for sale for human food which when killed was less than four weeks old.

SEC. 22. No person shall sell any skimmed milk, or milk which is part whole and part skimmed, unless at the time he sells the same he truly states the fact of such skimming to the purchaser.

SEC. 23. No person shall sell, or have for sale, any unwholesome, impure, diluted or adulterated milk, or milk known as "swill milk," or milk from diseased cows, or cows fed on swill, garbage or other unhealthy food ; nor cheese or butter made from such milk.

SEC. 24. These rules and regulations shall take effect and be in force from and after their passage.

NEW BOARDS OF HEALTH.*

A number of towns having failed to report the establishment of a board of health, the following autograph-letter was mailed to the mayors of one hundred and seventy-six delinquent cities and towns.

OHIO STATE BOARD OF HEALTH, SECRETARY'S OFFICE,

COLUMBUS, OHIO, *October 3, 1888.*

To the Mayor and Council of, Ohio:

GENTLEMEN: We sent you, some time ago, a circular-letter containing a copy of the law which requires the establishment of a board of health in your village.

We have failed to receive notification of your compliance with the law, and beg to call your attention again to the matter, trusting it will receive an early consideration. If you have established a board, will you kindly send us a list of the names of its members.

Respectfully,

C. O. PROBST, *Secretary.*

The result in securing new boards, or the re-organization of old ones which were non-active, has been very flattering, and the following towns have established boards of health under the action of this law:

Alliance.
Ansonia.
Antwerp.
Arcanum.
Archbold.
Ashley.
Bainbridge.
Bedford.
Belle Centre.
Bellville.
Bettsville.
Beverly.
Bethel.
Bloomingburg.
Bucyrus.
Cadiz.
Cambridge.
Camden.
Canal Winchester.
Carey.
Chillicothe.
Chicago.
Clyde.
Coalton.
Collinwood.
Conneaut.

Corning.
Coshocton.
Columbus Grove.
Cuyahoga Falls.
Delta.
Dennison.
East Palestine.
Elmore.
Fayette.
Flushing.
Forest.
Fostoria.
Gallipolis.
Georgetown.
Green Spring.
Hamden Junction.
Harmer.
Hartwell.
Jackson.
Jamestown.
Jeffersonville.
Leetonia.
Leesburg.
Leipsic.
Lewisburg.
Lima.

Linwood.	Pemberville.
Lorain.	Piqua.
Loudonville.	Quaker City.
Lynchburg.	Riverside.
Madison.	Roseville.
Madisonville.	Salem.
McComb.	Seville.
McConnelsville.	Shawnee.
Mechanicsburg.	Shelby.
Middleport.	Shreve.
Milford.	Sidney.
Millersburg.	South Charleston.
Minster.	Springfield.
Monroeville.	St. Mary's.
Mt. Pleasant.	St. Clairsville.
Mt. Sterling.	St. Bernard.
Mt. Vernon.	Sylvania.
Mt. Victory.	Tiffin.
Nelsonville.	Troy.
Nevada.	Upper Sandusky.
New Carlisle.	Union City.
New Lexington.	Utica.
New Lisbon.	Versailles.
New London.	Washington C. H.
New Matamoras.	Wellington.
New Paris.	Wellston.
New Richmond.	West Alexandria.
New Straitsville.	Westerville.
New Washington.	West Cleveland.
Niles.	West Liberty.
North Baltimore.	West Salem.
North Lewisburg.	Weston.
Oak Harbor.	West Milton.
Oak Hill.	White House.
Orrville.	Williamsport.
Osborn.	Willshire.
Ottawa.	Winchester.
Oxford.	Wooster.

*Since the above list was prepared 24 new boards have been organized. A complete list of local boards of health and health officers will be found on a subsequent page.

A large number of these boards have adopted the rules and regulations recommended by the State Board. By referring to the reports from local boards of health previously given, it will be seen that a large amount of practical sanitary work has already followed the establishment of such boards. There yet remain 68 towns of over five hundred inhabitants in which boards of health have not been established. Many of these will doubtless yet comply with the law, but in some, the "shall establish" will probably remain void without some penalty or other means of enforcement.

CIRCULARS.

Two circulars of instruction have been issued, one relating to Glanders and its Prevention, the other to Disinfection and Disinfectants. These circulars were published as supplements to the *Sanitary Record*, with re-

prints for further distribution. By including them in the *Record*, a considerable saving in postage was made. The proper use of disinfectants, which must include the use of proper disinfectants, is the main factor in the prevention of communicable diseases, and we have aimed in our circular to give to health authorities the latest information to be had on this subject. The Glanders circular was extensively distributed throughout the northern part of the State. This was done about the time the disease appeared in Cleveland, where it prevailed to a considerable extent.

The circulars were as follows:

GLANDERS.

A SUPPLEMENT TO THE MONTHLY SANITARY RECORD,

PUBLISHED BY THE

OHIO STATE BOARD OF HEALTH.

Glanders is a dangerous contagious disease, usually affecting horses, mules and asses, and capable of being communicated by them to man.

All persons handling these animals are endangered, and a number of deaths in human beings from glanders are recorded.

In the great majority of cases, the disease is incurable in both man and animals.

The disease in horses is not so uncommon as is generally supposed, for according to the report of the Ohio Live Stock Commission, glanders, in 1886, was undoubtedly present in every county in this State.

We trust, therefore, that the following information in regard to the cause, propagation and prevention of glanders, will prove useful to all those who, by occupation, are specially in danger of contracting this fatal disease.

ETIOLOGY OR CAUSE.

In all cases, glanders is traceable to a pre-existing case of the same disease.

No other disease ever results in glanders, nor will bad surroundings, bad food, etc., of themselves produce it.

It is a specific disease, just as small-pox is, and depends upon a specific contagium—a germ, probably, which may be destroyed outside of the body. As yet, no means are known by which this infectious element can be attacked within the system; hence, glanders may be prevented, but cannot be cured.

NATURE OF THE CONTAGIUM.

The contagium or germ of glanders, under favorable circumstances, may remain active for months, adhering to bedding, manure, feeding-box, manger, etc., or wrapped up in a moist rag or blanket. Discharges containing the poison, when spread out and dried,

soon lose their infectious properties, moisture being one of the requirements for its preservation.

By the action of boiling water, or of solutions of corrosive sublimate, chloride of lime or carbolic acid, and probably also by the fumes of burning sulphur, the germ or contagium is quickly destroyed.

The active principle of the disease is both fixed and volatile, i. e., transportable by the air for short distances.

HOW COMMUNICATED.

The disease may be contracted in a number of ways. The poison is undoubtedly present in the discharges from the nose, and from running sores upon the body. These discharges may be deposited in stalls, watering-troughs and buckets, upon harness, blankets, cloths, sponges, vehicles, etc., and a well horse coming in contact with any of these articles may receive the poison of the disease through some sore or break in the skin or mucus membrane.

It is probable, however, that in the majority of cases, *the contagium gains access to the system through the inspired air*. This may be directly by means of the expired air of a glandered horse, or indirectly by the inhalation of germs liberated from discharges containing them.

The contagious principle is probably present in the secretions, and, according to Gerlach, may be communicated by suckling.

GLANDERS IN THE HORSE.

The disease is usually spoken of as *acute* and *chronic*, according to its duration; and as *nasal*, *pulmonary* or *cutaneous* (Farcy), according to the structures affected.

These varieties, however, are but different symptoms of one and the same disease, and are all equally infectious.

ACUTE GLANDERS.

Acute glanders, acute from the beginning, is a comparatively rare disease; chronic glanders, however, almost invariably terminates with the acute form. In either case, marked febrile symptoms appear; the lining membrane of the nose becomes congested and thickened, and within a few days it becomes the seat of numerous nodes or tubercles, and infiltrations, which can be readily made out. These soon break down, forming ulcers, which, by spreading, involve more or less of mucus membrane.

A discharge from the nose follows the stage of congestion. This is at first thin, but soon becomes thick and of a yellowish-green color, adhering more or less to the nostrils. The discharge is often limited to one nostril. As the fever and prostration increase, nodules and ulcers frequently appear over different parts of the body, the animal grows thin, diarrhœa often sets in, and death usually follows in from eight to twenty-one days.

CHRONIC GLANDERS.

Chronic glanders runs a more protracted course, often existing for months and even years.

In the nasal variety, nodes form as in acute glanders, which break down and form ulcers. These are especially to be found upon the sides of the *septum nasi*, or partition of the nose.

Nasal catarrh makes its appearance, the discharge, at first clear, becoming purulent (matter), and drying on the edges of the nostrils.

The submaxillary glands (the glands under the lower jaw) become enlarged, lumpy

or nodular, and are hard and firmly fixed to the tissues of the lower jaw. When the discharge is limited to one nostril, the gland on the corresponding side is alone involved; when both nostrils are affected, both glands are also enlarged. The glands remain enlarged and hardened, and do not break down and suppurate. They are seldom or never similarly affected in any other disease, and may be set down as characteristic of glanders. These symptoms may continue for a variable time, exciting little or no constitutional disturbances; finally, however, the appetite diminishes, the animal emaciates, and the acute form of the disease often develops, and speedily ends in death.

"When *farcy* is *supcradded* to glanders, there are formed upon different portions of the body, most frequently upon the extremities, head and neck, abscesses and nodules of the size of a hazel-nut, which at the outset are hard and painful. While these abscesses are more or less rapidly breaking out, the *farcy sores* make their appearance, from which an exceedingly foul sanguino-purulent discharge is poured out. These ulcers are for the most part deeply excavated, and have turbid-gray or grayish-red glistening bases, with elevated, usually ragged looking edges. The surrounding cellular tissue is generally indurated (hardened) and swollen; the corresponding lymphatic vessels swell, giving to the touch the idea of a cord (*farcy pipes*)." [Bollinger in *Ziemssen's Cyclopædia*.]

PULMONARY GLANDERS.

In pulmonary glanders all external symptoms of the disease may be absent. It is nearly always a chronic disease, and may last for months without presenting any of the usual outward manifestations of glanders. For this reason it is the most dangerous form of the disease, as a horse so affected may communicate it to numbers of others before it is suspected of having the disease.

Pulmonary glanders is of more frequent occurrence than is generally stated.

"At the Berlin school, where very exact records are kept of the results of each autopsy, it was found that in 216 cases of glanders, upon which examinations were made between the years 1871 and 1874, the location of the disease in the lungs failed in but ten of them, while they were wanting in thirty-three cases in the nasal cavities and those of the head."—*Billings*.

According to Gerlach, a horse should be looked upon with suspicion.

1. "When it has a dry, dull wheezing cough, with retarded respiration; when the general condition of the animal is poor, the hair staring, the body emaciated.
2. "When horses in this condition have stood or worked beside, or otherwise been in relation with others known to have had glanders.
3. "When the dyspnoetic phenomena (broken winded) have been anticipated by suspicious glandular or catarrhal phenomena.
4. "When a horse that has been much in contact with such a broken-winded horse acquires the disease, the latter should be suspected.
5. "When, in the course of the above condition, any suspicious glandular or catarrhal complications make their appearance."—*Billings*.

CARE OF A SUSPECTED ANIMAL.

When a horse or other animal presents any of the symptoms of glanders already described, or when for any reason it is suspected of being affected with the disease, it should at once be separated from all other animals until it has been examined by a competent veterinary surgeon, and the character of the disease determined.

If the suspected animal has been kept in a stable with other horses, it is better to remove the unaffected animals to distant quarters, as the stable may already have become infected. When this cannot be done, the suspected animal, if well enough to work, should be used entirely apart, and nothing it comes in contact with should be used about a well animal. When an animal is *known* to have glanders, feeding-boxes, man-

gers, brushes, combs, harness, wagon-poles, neck-yokes, etc., which have been used about the affected horse, should either be burned—the safest plan—or disinfected with a strong solution of corrosive sublimate or carbolic acid. If the horse has been kept in an enclosure, the fence, posts, etc., at which he has stood, should be treated in the same manner.

A stable which has been occupied by a glandered horse should be burned, if not too valuable. When this is not done, the stable should be cleared of all hay and litter, which should be burned, and the stall, manger, etc., should be washed with a disinfectant solution. Corrosive sublimate, 2 drachms to the gallon of water, would be suitable for this purpose. Then, when possible, the stable should be fumigated with sulphur. To do this effectually, however, it is essential that all openings and cracks should be securely closed, and not less than three pounds of sulphur be burned for each 1000 cubic feet of air-space in the stable.

GLANDERS IN MAN.

Glanders in man is due to the same specific poison that causes the disease in animals, and the persons most commonly affected are those whose business brings them among horses.

The poison may enter the system through any abraded surface, such as cuts, scratches, hang-nails, etc., about the hands of a person handling a glandered horse, whether it is alive or dead.

The disease may also be contracted by handling harness, sponges, cloths, etc., that have been in contact with a diseased animal.

The poison may be blown into the eyes, nose, or mouth of a person by the snorting of a horse, or may be inhaled, and has been known to follow sleeping over an infected stable. It has been caused by drinking from a bucket or trough in which a diseased horse has been watered. Eating the flesh of a glandered horse will also produce the disease; and as sheep, swine, and all domestic animals, except cattle, may have glanders, it is not impossible that the disease is sometimes caused in this manner.

It may be communicated from man to man, but this is very unusual. A case is on record where a child, suffering with the disease, gave it to its nurse; therefore in caring for a person suffering with glanders, its possible contagiousness should be borne in mind. All secretions should be disinfected, and drinking vessels, etc., should not be used by an other without first being cleansed in *boiling* water.

To prevent glanders in man, as well as in animals, by far the most important factor is the immediate destruction of all glandered animals.

It is useless to attempt to cure an animal suffering with glanders, and it is a constant danger to the lives of other horses, as well as to that of its owner and keeper. It is a "penny wise and pound foolish" policy that leads any one to retain an animal of this kind for the few months of work that can be got out of it, and when the diagnosis has been made certain, the animal should be immediately slaughtered. Its hide should be slashed to render it worthless, and its body should be burned, or buried at least six feet deep in the earth.

By a faithful observance of these measures, glanders can undoubtedly be stamped out, and the safety of man and beast secured.

LAW OF OHIO IN RELATION TO GLANDERS.

The following law, for the prevention of glanders, was enacted by the General Assembly of Ohio, April 16, 1888:

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That any person owning or having in his charge any horse, mule or ass that he knows or has reason to believe is affected with the disease known as glanders or farcy, or that has been adjudged to be so affected by the state board of live stock commissioners, upon a report made to said board by a competent veterinary surgeon in their employ, after a careful examination of such animal, who shall sell or otherwise dispose of, or secrete the same, or shall fail to keep such animal securely isolated so that contact with other horses, mules or asses shall not be possible, shall, upon conviction of either of said offenses, be fined in any sum not exceeding five hundred dollars, and shall, moreover, be liable for all damages sustained by reason of the same.

SECTION 2. In case the live stock commissioners shall order the destruction of any animal affected with glanders or farcy in the chronic stage of the disease, which may be adjudged capable of rendering some service, the board may cause the animal to be appraised, and order such compensation to be paid out on the order of the live stock commissioners on the warrants of the auditor of state out of any funds in the treasury to the credit of the live stock commission, as in the judgment of the commissioners may be just, not exceeding its cash value; provided the horse was not diseased when passed in possession of the owner. [O. L., Vol. 85, page 335.]

DISINFECTION AND DISINFECTANTS.

A SUPPLEMENT TO THE MONTHLY SANITARY RECORD,

PUBLISHED BY THE

OHIO STATE BOARD OF HEALTH.

"The object of *Disinfection* is to prevent the extension of infectious diseases by destroying the specific infectious material which gives rise to them. This is accomplished by the use of *Disinfectants*."

DISEASE GERMS.—The practice of modern sanitation for the prevention and restriction of infectious diseases is based upon the "germ theory" of disease. The "germ theory," which, for some diseases at least, is no longer a theory, but a fact, attributes the infectious diseases to a germ—a minute organism, which finds its way into the human system, where it rapidly multiplies, and in some manner produces the symptoms of disease. By disinfectants, we kill these germs directly; by sanitary cleanliness, we remove from our surroundings the food upon which they live, destroying the germs by starvation.

A person affected with an infectious disease will, it is supposed, have these germs present in some of his excretions; for instance, in cholera and typhoid fever they are found chiefly in the stools of the patient, while in diphtheria they are mostly confined to the excretions from the throat and nose. Our first object in the prevention of infectious diseases is to destroy these disease-germs as soon after they are cast out of the body as possible. But from their extreme minuteness—being invisible except with the microscope—

we may expect them to be found clinging to clothes, bedding, furniture, and, in fact, to everything, contained in the room occupied by the patient. Hence, while great care must be taken to disinfect the *excretions* of a person sick with an infectious disease we must also disinfect everything which has been near such a person, and which may possibly have upon or in it these micro-organisms, which are the cause of the disease.

While it is true that it has not been positively proven that all infectious diseases are due to germs, experience has demonstrated that those agents which are known to destroy these micro-organisms are also destructive of the infectious material by which such diseases are communicated, whatever this may be.

Much harm has resulted from the careless use of the term *disinfectant*, and many agents so called are incapable of destroying the power of infectious material. Some of these are merely *deodorizers*, destroying the bad odor which is usually connected with the filth in which disease-germs may be found. Others arrest the action of these germs, preventing their multiplication, but do not destroy them. These are properly called *antiseptics*. It is evident that these agents should never be used in the place of the true disinfectants, and while bad odors should be corrected, if an infectious disease is to be combatted, germs and not odors are to be destroyed.

Antiseptics and deodorants can be used to excellent advantage in preventing putrefactive decomposition in masses of filth which offer breeding places for disease-germs, but the removal of all such filth, and perfect cleanliness is much safer and more desirable.

Before considering the practical uses of disinfectants it should be stated that germ-life presents different degrees of resistance to their action. Some forms are easily destroyed, while others are killed only by the most powerful agents. This difference in their behavior is mainly due to their different manner of propagating. Some forms multiply by simple division; these and their progeny are very easily destroyed. Others give rise to spores or seeds which may afterwards develop into germs. These spores offer a much greater resistance to destructive agents.

A number of disinfectants have been recommended. Some of these are fatal to all known forms of germ-life, including spores; others, which destroy germs, do not affect their spores. As the diseases in which spores are always present has not been certainly determined, a safe rule is to use such disinfectants as are known to have the power of destroying spores.

The same general plan of procedure for the prevention of infectious diseases is, with slight modifications, applicable to all. It consists essentially in the isolation and destruction of the poison or germ which produces the disease.

"In the sick-room we have these disease-germs at an advantage, for we know where to find them, as well as how to kill them."

A sick-room, for a case of infectious disease, should contain as few objects as the welfare of the patient and his attendants will allow; for every thing the room contains must subsequently be submitted to a disinfecting process. There are no disinfectants which can be used for disinfecting the air of an occupied sick-room. The practice of hanging up cloths saturated with carbolic acid, or of placing saucers of chloride of lime in the sick-room, are not only annoying to the patient but utterly useless. We may, however, *purify* the infected atmosphere by admitting an abundance of *fresh air*. This not only greatly lessens the danger incurred by attendants, but is an important factor in the recovery of the patient, as is shown by the lessened mortality of such cases when treated in tents or in the open air. In admitting fresh air, the patient should be protected from a direct draft.

Our first care in disinfection must be given to the patient's discharges. While, as has been pointed out, the poison of cholera and typhoid-fever is found chiefly in the excretions from the bowels, it is a wise precaution to disinfect all discharges from a person sick with an infectious disease.

Heat is one of the best agents for destroying infectious material.

The excretions may be received upon old rags or in sawdust, and should be burned at once. Burning is also a safe and speedy method of disposing of clothing, bedding, etc., soiled by discharges, if not too valuable to destroy. *Boiling water* is also an efficient disinfectant, destroying, in a half-hour's time, all known forms of disease-germs. It may be used for all articles which can be wetted without injury. Soiled bedding, clothing, towels, handkerchiefs, etc., should be placed at once in boiling water, and boiled for an hour. Where this is to be done outside of the sick-room, they must be carried from the room wrapped in a sheet saturated in a disinfection solution, and placed in boiling water without unwrapping. Other articles which can be boiled, and which have not been in contact with the patient, may be treated in this way at the end of the patient's illness. Where proper apparatuses are accessible, clothing, bedding, etc., may be disinfected by steam under pressure (25 lbs.), or by dry heat (230° Fah. for two hours). The former destroys, almost immediately, the most resistant spores. The latter is only effective when these are absent. Instead of heat; we may use chemical disinfectants.

CHEMICAL DISINFECTANTS.—Two of these—corrosive sublimate and chloride of lime—in solutions of proper strength, will destroy all known disease-germs and their spores. Whenever a disinfectant solution can be used for infectious material, one or the other of these agents is to be preferred.

Chloride of lime (bleaching powder). This should be kept in close, moisture-proof receptacles, and should have a strong odor of chlorine. For excreta, the following solution should be made:

Chloride of lime, 8 ounces.

Water (soft), 1 gallon.

A quart or more of this solution should be placed in the vessel before it receives the discharges, which should be thoroughly mixed with the disinfectant, and allowed to remain in the vessel half an hour. The contents may then be thrown into the water-closet or privy-vault.

When a person dies of an infectious disease, his body should be wrapped in a sheet saturated with this solution, and be buried or cremated as soon after death as possible.

The chloride of lime being an excellent deodorant, as well as a disinfectant, is especially applicable when bad odors are to be counteracted. A solution made by adding one quart of the above solution to one gallon of water, may be used for disinfecting clothing, bedding, etc. When used for this purpose, the articles to be disinfected should be immersed in the solution and allowed to remain several hours; they should then be wrung out and sent to the laundry. If the process is not to be done in the sick-room, the infected articles should be removed, wrapped in a sheet saturated in the disinfectant solution. The chloride of lime solution of this strength may also be used for washing the hands of attendants and the body of the patient.

Labarraque's Solution (*liquor sodæ chlorinatæ*), one part to five parts of water is a more elegant but more costly preparation, which may be used for the same purpose.

Corrosive Sublimate (bi-chloride of mercury). The following standard solution may be prepared, from which, by the addition of water, solutions of any desired strength may readily be made:

Corrosive sublimate, 4 ounces.

Sulphate of copper, 1 pound.

Water, 1 gallon.

The sulphate of copper, besides being a good disinfectant and deodorant, also gives a blue color to the solution, which will indicate its poisonous properties. This solution should be kept in a glass bottle, labeled *poison*. Solutions of corrosive sublimate must not be kept in metal receptacles; and it should be borne in mind that they injuriously affect lead pipes when poured through them in large quantities. For disinfecting stools, etc., add eight (8) ounces of this solution to one gallon of water. A quart of this diluted solution should be placed in the vessel to be used for discharges which should be

thoroughly mixed with the solution and allowed to remain several hours before being thrown into a privy-vault or water-closet.* For disinfecting clothing, bedding, handkerchiefs, towels, etc., where these cannot be *immediately* boiled, a solution may be prepared by adding two (2) ounces of the strong solution to one gallon of water. Articles soiled with discharges should be *at once* immersed in this solution and allowed to remain several hours before sending to the wash. The same solution may be used for disinfecting glasses, dishes, etc., used by the patient, bearing in mind that anything carried from the sick-room may be the bearer of the germs which it is the object of disinfection to destroy. The remains of food and drink brought to the patient should also be treated as infectious material, and not thrown in the swill-tub unless disinfected. The floor, furniture, windows, etc., should be wiped daily with a cloth wet with this same solution (or with the diluted chloride of lime solution), but dusting and sweeping should not be done.

DISINFECTION OF THE SICK-ROOM.-- After the death or recovery of a person from an infectious disease, the room he occupied, and everything it contained, must be thoroughly disinfected. Everything should be subjected to their action. The disinfectants of this class, which can generally be used, include fire, boiling water, corrosive sublimate and chloride of lime. Directions for their use have already been given. The room itself, and such of its contents as have not been disinfected by one or the other of the above agents, should be treated as follows:

The surface of walls, ceiling, floor, windows, the wood-work of furniture, etc., should be thoroughly washed with a solution made by adding four ounces of the strong mercury solution to one gallon of water. Care should be taken to apply it to all ledges, crevices, etc., where dust has settled. After the solution has remained on a few hours, it should be washed off with soap and hot water. The room and contents should then be fumigated with sulphurous acid gas. This agent, formed by burning sulphur, when confined and in the presence of moisture, is capable of destroying all disease-germs, but does not affect their spores. It is a valuable disinfectant, however, easily applied; but dependence should not be placed upon it to the exclusion of the other measures just given. To disinfect a room with sulphurous acid gas, we must present the greatest possible amount of surface to its action.

It is quite useless to fumigate clothing, bedding, etc., arranged in piles or bundles. Mattresses, stuffed bed-covers, etc., should be cut open and spread out. Clothing should be hung upon lines; carpets are best fumigated on the floor.

These precautions will be useless unless the gas can be kept in the room. All openings, fire-places, cracks and crevices around doors, windows, etc., should be stopped with cotton or paper.

Not less than three pounds of sulphur should be burned for each thousand cubic feet of air-space in the room. The sulphur, broken in small fragments and placed in a shallow pan set in a tub partly filled with water to prevent fire and furnish moisture, should be moistened with alcohol and set on fire. After twenty-four hours, the room may be opened and aired, and should be again thoroughly cleaned with soap and hot water. Carpets, clothing, etc., should be hung up out of doors, and thoroughly aired, beaten and shaken.

To completely disinfect a sick room, requires intelligent care and considerable labor, and, whenever possible, should be done under the immediate supervision of the health officer or attending physician.

Disinfectants may be required outside of the sick-room. Infectious material may carelessly be thrown into privy-vaults, cess-pools, etc. This should never be done, as it

*Mercurial solutions from a coating of insoluble albumenoid matter around solid or semi-solid masses, and germs buried in the center of such masses may escape destruction; chloride of lime, on the other hand, when used in excess, completely destroys the material to be disinfected, and is therefore preferable for the disinfection of solid or semi-solid fecal matter.

is almost impossible to thoroughly disinfect such places, and there is great danger of adjoining wells or springs becoming infected. When known, however, that infected discharges have been thrown into a privy-vault or cess-pool, corrosive sublimate, in solution, should be used in the proportion of "one pound for every five hundred pounds—estimated—of fecal matter contained in the vault. All exposed portions of the vault, and the wood work above it, should be thoroughly washed down with the disinfectant solution."

Copperas, or sulphate of iron, an excellent and cheap *antiseptic*, may be used in privy-vaults, cess-pools, drains, sinks, etc., when these become foul, but it should not be used when these places are known to be infected with the germs of infectious disease. *Copperas* was formerly recommended, and is still used by some for disinfecting the excreta, etc., in infectious diseases. *This should not be done.* *Copperas*, in concentrated solution, does not destroy the vitality of disease-germs, and has no effect whatever upon their spores.

Carbolic Acid has been quite extensively used as a disinfectant. In the absence of spores, it may be used for excreta in the proportion of seven (7) ounces to the gallon of water. For clothing, etc., a solution of half this strength should be used.

Sulphate of Copper. This salt, in the proportion of four ounces to the gallon of water, is an efficient disinfectant, and is also a deodorant of great value. It does not destroy spores.

Chloride of Zinc, in solution, six (6) ounces to the gallon, is also an efficient disinfectant, readily destroying all germs, but not affecting their spores.

While either of these agents, except *copperas*, may safely be used in diseases in which spores are absent, it is preferable, for reasons previously stated, to use the spore-destroying disinfectants.

Disinfection plays an important role in the prophylaxis or prevention of disease. We know, for some of the infectious diseases at least, the media by which they are usually conveyed.

Cholera and typhoid-fever, for instance, are contracted in the majority of instances through the ingestion of infected food or drink, especially the latter. Hence, when these diseases are present, it is a safe plan to boil the water used for drinking purposes. Milk, also, should be treated in this way, as it is not only frequently diluted with water, which may be infected, but may itself be the carrier of disease-germs. Scarlet-fever, diphtheria, and typhoid-fever have been communicated by infected milk.

It is now believed that tubercular consumption is an infectious disease, and may be contracted by the inhalation of spores present in the expectoration.

For this reason, the expectoration of consumptives should be received in vessels containing a solution of corrosive sublimate or chloride of lime.

Filth, in itself, is considered by some to be a cause of diphtheria. However this may be, filth of all kinds offers a breeding place for disease-germs, while by cleanliness, and the proper use of antiseptics, we may render such material incapable of supporting germ-life.

While there is much to be learned in regard to the origin of infectious diseases, a thorough application of the measures above given would undoubtedly lessen their prevalence to a very great extent.

The contagious disease circulars have not been so generally distributed as in the two previous years, but have been mostly placed where the diseases treated of were actually present.

ANNUAL REPORT.

Twenty-five hundred copies of the second annual report of the Board were printed. About 2,200 of these have been distributed as judiciously as possible.

We trust that in these various ways good seed has been sown, which will bear fruit in the near future.

REPORTS OF INVESTIGATIONS MADE BY THE SECRETARY.

INVESTIGATION OF A NUISANCE CAUSED BY A DISTILLERY AT LYNCHBURG.

In May a petition signed by about eighty residents of Lynchburg and vicinity was received, asking this Board to investigate a nuisance, said to be caused by a distillery owned by Freiburg & Wurkum, of Cincinnati. Accordingly, on the 11th of May, I visited Lynchburg and met a number of the petitioners from Lynchburg and the surrounding country. From observations and inquiry the following was learned: The distillery in question is a large establishment, situated at the upper end of Lynchburg upon the left branch of the east fork of the Little Miami River. Across the river, immediately opposite, is a large cattle pen, containing at the time 416 head of cattle, which is the limit of its capacity. Back of the distillery, on the same side of the river, is a similar pen, containing something over 300 head of cattle. The cattle are owned by Freiburg & Wurkum, and are kept to utilize the slop wastes from the distillery. The slop is received in six or eight large tanks, in which it is partly cooled, from whence it is conducted through sluice-ways into feeding troughs. Immediately behind each row of stalls is a gutter which receives the excrement from the cattle and conducts it from the pen on to the ground adjacent. In the case of the pen across the river from the distillery, this matter is dumped directly into the river, when at a moderately high stage. When the river is low, as at the time I saw it, the dump is on a sloping bank within a few feet of the river. At the other pen the manure is dumped on the ground and overflows a large lot adjacent to the stable, and about fifty yards from the distillery. Leading from this pen is a long trough extending to a field about 200 yards distant, which is used to carry away

the distillery slops not wanted for the cattle. This slop, apparently, would very readily find its way into the river, near by. The superintendent informed me that when the stables were full, all, or nearly all of the slops are fed to the cattle. The cattle are usually sold and shipped in June, each year, and the distillery shuts down a few weeks, often remaining closed during July and August.

The east fork of the Little Miami river is a small stream, forming a partial boundary line between Highland and Clinton counties. Three hundred yards above the distillery, it was, at the time of my visit, a clear stream of average purity. Below the distillery it was dark, dirty, and unwholesome looking, and near its banks was deposited a semi-fluid greenish substance, exceedingly offensive in appearance and odor.

As far down as Boyl's mill, seven or eight miles from Lynchburg, the stream presented the same appearance, except the deposit spoken of was not noticed. I detected no special odor at this point. I was informed that the nuisance (a polluted stream giving rise to bad odors), was complained of all along to below Fayetteville, which by following the course of the stream, is some sixteen or eighteen miles below Lynchburg.

It was stated that the stench arising from the stream was often almost unbearable; that stock refused to drink the water most of the time, and that fish in large numbers were killed, their putrefaction adding greatly to the stench.

Dr. Kleckner, of Lynchburg, said it was a great nuisance, but he could not positively say it had been the cause of ill health to any one. The stream, last fall, was exceedingly low, and, as many wells in the neighborhood failed, it was used by some for drinking purposes.

There was no unusual amount of sickness in the neighborhood during that time, and few or no cases of typhoid-fever. But few cases of true diphtheria.

During the past winter and spring the sickness and number of deaths in Lynchburg was greater than usual.

Many years ago an epidemic of dysentery prevailed there, which some of the physicians thought was due to the condition of the river.

The distillery, the cause of the nuisance complained of, is located within the corporate limits of the village of Lynchburg, the corporation line extending to the middle of the stream in question.

After consulting the Attorney-General as to the powers of the State Board of Health in the case, I wrote to the board of health of Lynchburg informing them that the nuisance was one coming under the jurisdiction of their board, and one which they were fully authorized to abate; and that the act creating the State Board of Health did not confer upon it the power of abating nuisances.

INVESTIGATION OF SMALL-POX AT STRINGTOWN.

Telegraphic notification of small-pox at Stringtown, Ohio, was received August 2. Having learned by wire that Dr. Stewart, of Jolly, Ohio, six miles from Stringtown, was the attending physician, a supply of vaccine virus was sent him at once, with instructions to isolate and vaccinate all exposures.

A circular-letter was sent to boards of health, or to mayors, of all adjacent towns, notifying them of the outbreak.

Dr. Stewart reported all exposed persons vaccinated but not isolated. The county board of health of Tyler county, W. Va., in the meantime declared and maintained a non-intercourse quarantine with Stringtown and the adjacent country. The case recovered, the house was disinfected, and quarantine raised, when a second case was reported. Instructions were then sent to the township trustees for the proper care of the case. A few days later a telegram was received from Dr. Stewart and the township clerk, asking me to come at once.

I arrived next day at Sistersville, a small town in West Virginia, immediately opposite Stringtown, and called on the county health officer, Dr. W. H. Gillespie, and with him visited Stringtown and the township clerk, who lives in the country, several miles away.

The first case of the disease was a child named Dora Boyles, aged six years, who came with her parents from London, Ohio, via the Pan Handle route to Wheeling, and then by the Ohio River road to Stringtown. So far as can be learned, the infection must have been received on board train. She was taken sick July 26, about ten days after her arrival, but the diagnosis was not made until July 29. The disease was reported to be "blackberry rash," and a number of people came to see it. After a proper diagnosis was made, the child was isolated at the house of her grandfather, Mr. Cain. On the eighteenth day of her illness she was pronounced convalescent, and the house and effects were disinfected.

The next day a daughter of Mr. Cain, aged about eighteen years, was taken sick. She had had no contact with the first case, after the disease was pronounced small-pox, and was living at the saloon kept by her father. She remained there several days, and was then taken to the house in which the first case had been confined, the saloon being fumigated with sulphur. The girl, at the time I was there, had been sick some ten or twelve days with a severe form of confluent small-pox. In the house with the patient was a nurse, the little girl who was first sick, and her father, who had, a few days before, been stricken with complete paralysis. Fortunately he had had small-pox. The road near the house divides in a

Y-shape, the house standing on the tail of the Y, and all passers-by necessarily come within a few feet of the house. An old man was acting as guard, but people passed him with impunity, refusing to go out of their way to avoid the house. The town, if it could be called such, consists of two saloons and eight or nine dwellings. The saloons and two dwellings were the only houses occupied, the residents of the other houses having fled from the disease.

The following day I met, by appointment, the township trustees. Some uncertainty was manifested as to their powers and duties in maintaining quarantine. The expenses of quarantine, they thought, should be assumed by the State Board of Health, and they claimed to be unable to find parties willing to act as guards. Their attention was directed to sections 1462 and 1463 of the Revised Statutes. The notices mentioned in the former section had been duly posted, but little else to prevent the spread of the disease had been done. After some discussion as to the duties of township trustees in preventing the spread of infectious diseases, they finally agreed to follow such written instructions as might be given them.

It was directed that they should barricade both roads leading past the house, and appoint a day and a night guard, to be constantly on duty, with orders to arrest any one coming within quarantine boundaries. It was thought prudent to leave the saloons, which were not near the house, outside of quarantine boundaries. All food, drink, etc., to be carried by the guards from the outer limits of quarantine to the house. Directions were also given for the thorough disinfection of the house, clothing, etc., after the death or recovery of the patient. I arranged with Dr. Gillespie to secure two reliable guards from West Virginia, who had had small-pox. The township clerk afterward informed me that these instructions were promptly and thoroughly carried out. The West Virginia authorities raised quarantine, and no other cases occurred.

The following letter closes the report:

JOLLY, OHIO, *September 17, 1888.*

This is to certify that I was with Dr. S. L. Stewart, who has been the regular attendant of the cases of small-pox at Stringtown, Monroe county Ohio, and assisted in the disinfection of the premises occupied by said cases. The walls of the house were stripped of paper and washed with a solution of corrosive sublimate; rooms sealed and sulphur burned, and ceilings whitewashed. The bedding mostly burned; what has not been burned has been boiled. I consider every precaution has been taken to prevent the spread of the disease.

[Signed]

W.F. GREENFIELD, M. D.

SMALL-POX AT COSHOCTON.

An outbreak of small-pox at Coshocton, Ohio, was first reported in the *Columbus Evening Dispatch* by a special correspondent from that town. I immediately telegraphed the mayor of Coshocton, asking for exact information and offering aid if required. I was informed, after some delay, that the cases had all been removed from town and isolated, and the house they occupied had been thoroughly disinfected.

The following report from the attending physician was received:

COSHOCTON, OHIO, *September 9, 1888.*

C. O. PROBST, M. D., *Secretary Ohio State Board of Health, Columbus, Ohio:*

MY DEAR SIR: Yours of the 8th inst. came to hand. In reply would say, that I was called to see a boy on the twenty-fifth day of August, who had then been sick ten days. I found him already in the pustular stage of small-pox, and so pronounced. They had moved the previous Wednesday from Coalport, a small mining town principally of negroes, six miles west of this city. The mother contended that it was nothing more than measles, which the other children, six in number, had all recovered from while they were still in Coalport. This boy is fourteen years of age. Next Thursday will be four weeks since he took sick. The stage of desquamation has progressed favorably, being completed about the face, which this morning's examination shows to be well pitted. The mayor was informed of the condition of affairs at my first visit; the family, consisting of father, mother and seven children, were removed to an extremely isolated cabin, one mile from the corporate limits, and at least three-fourths of a mile from any other dwelling. On the following Friday, September 31, some of the children were complaining of head and backache, and on Sunday morning, September 2, I found the whole family down, some of them showing both the macules and papules of small-pox—on Wednesday morning vesicles were plenty. They are now covered with pustules, which, on the father's face and that of three or four of the children, are confluent. The mother is improving, and only shows a pustule here and there on the face; they are also sparse upon the other parts of the body. She is the only one of the family who presented a vaccination mark. Ergo, I presume her case is that of varioloid. I omitted to mention that I vaccinated the whole family before their removal from town. This is the seventeenth day since their removal, and no other cases have developed within the corporate limits. Nothing reliable is to be ascertained as to the exposure of the young man.

It seems to me to be either a case *de novo*, or else the contagion has been carried to Coalport by some of the roving negroes, of whom the country is full. However, no other cases have appeared in Coalport. I would not be surprised should the father and one or two of the children die before the week is out.

I am very particular as to my own person—having a suit of clothes in an out-house at home, which I don upon making a visit, and another one under a tree five hundred yards from the house, which I put on before going in, and drop upon my return, being careful to wash my hands, face, hair and mustache thoroughly with a one to 2,000 solution of mercuric chloride. Carbolic acid, chloride of lime, etc., are used freely about the house.

Can't you come up and investigate some? I have given you all the important particulars that occur to me at present; should there be any further developments I will advise you.

Your most obedient servant,
[Signed] ARTHUR M. DENT, M. D.

[No further cases of the disease occurred.]

SMALL-POX AT OAKLEY, NEAR CINCINNATI, OHIO.

I was notified by telegram, January 31, 1888, of a case of small-pox at Oakley, Ohio, and immediately wired Dr. Stanton, health officer of Cincinnati, of the fact. The following answer was received:

CINCINNATI, OHIO, *February 1, 1888.*

C. O. PROBST, *M. D., Secretary State Board of Health:*

DEAR DOCTOR: Yours of the 30th ult. was just received. I am much obliged to you for your telegram in regard to small-pox at Oakley. I had heard of the case, and had written to Dr. Metz for particulars of the case, in order that we might take such precautions as we might deem necessary to prevent the introduction of the disease into the city. A letter just received from him gives no information as to location, but says he has taken all the precautions necessary to prevent the spread of the disease. I had been informed that men boarding in the same house were still working on the railroad and elsewhere in the neighborhood. but I do not know that such is the case.

Very respectfully.

[Signed]

B. STANTON, H. O.

These are the only cases of small-pox known to have occurred in the State during the year. Other cases were reported, but investigation proved the reports to be unfounded.

INVESTIGATION OF FEVER AT CALDWELL, OHIO.

The following letter was received September 18, 1888:

CALDWELL, OHIO, *September 17, 1888.*

Secretary State Board of Health, Columbus, Ohio:

DEAR SIR: Some time ago Mr. W. D. Guilbert, of the Auditor of State's office, stated to us that you would send a man to our place to investigate the matter of fever prevailing to some extent in this part of the State, if it was desirable on our part for you to do so. We indicated to him our willingness, and he told us he would so state to you. As no one has been here yet, this is to state to you that at an informal meeting of our board of health to-day, I was instructed to write to you to quietly make us a visit and investigate the matter.

Yours truly,

(Signed)

C. M. WATSON, *Mayor.*

On Wednesday, September 19th, in answer to the above, I went to Caldwell, and the same evening met the board of health and health officer, Dr. Cain.

The following history of the disease prevailing there was obtained from the board and resident physicians:

Caldwell, the county seat of Noble county, is a village of about twelve hundred inhabitants, situated on a creek-bottom, and surrounded on three sides by a fork of Duck creek.

The town has been notably free from fevers for twenty years or more, with the exception of four cases of typhoid-fever, which occurred about

1872, in an old jail, since removed. A few cases occurred each year for several years following.

In the early part of June, 1887, the first cases of fever appeared, between sixty and seventy cases occurring within the next three months. Of this number, about seven died.

As nearly as can be learned, the first case appeared in a small, frame house, which was found situated on damp, low ground, without a cellar, and with little or no air space under it.

A cistern was under the kitchen, and just by the kitchen door, the well, which evidently receives surface drainage. When seen, the water was within two feet of the surface, and was dark and filthy in appearance.

The drought of 1887 had killed all the vegetation in and around Caldwell; the wells were low or exhausted, and the creek was reduced to stagnant, shallow pools. These conditions preceded the outbreak of the fever, and continued during its prevalence; only one or two new cases occurred after cold weather set in.

The disease again made its appearance in July of the present year.

The first cases in town, or at least among the first cases, were two in the house where it first appeared the year before. Both were severe cases, and one died. A number of other cases followed, until eighty-eight—counting both mild and severe cases—had occurred up to September 20. Of this number, eight had died, and another case was expected to terminate fatally.

Of the eight deaths, six were females. Four cases and two deaths have occurred in employes at the court-house (this is counting both years). The court-house is an old building, situated on low, damp ground, and has a water-closet in the basement connected with an untrapped sewer.

The jail and bank are also connected with this sewer, which passes under the main street, and receives part of the surface drainage through untrapped catch-basins.

There are no other sewers in the town, excreta being deposited in boxes on the surface, or in shallow vaults. These, so far as seen, as well as streets and alleys, were in an average condition of cleanliness.

The water supply of Caldwell is from both deep and shallow wells. The soil consists of white and yellow clay to a depth of from twelve to fifteen feet, underlaid by a layer of limestone boulders, in which water is found. Beneath this is limestone rock, into which a number of deep wells have been drilled. During the drought of 1887, including the time of the epidemic, these wells furnished most of the water used, many of the shallow wells having failed; the water is very hard.

On Thursday, in company with Drs. Martin, Beebout, Cain and Mc-

Kee, I visited some ten or twelve of those affected. The severity of the disease varied greatly in different cases. Drs. Cain, Beebout and McKee all claimed to have had it themselves in a mild form, the symptoms being simply malaise, with a remittent type of fever, lasting only a few days. The fatal cases, however, and a large number of those that had recovered, had been sick for two, three and four weeks. The fever, it was claimed, had been distinctly remittent, and, in some, intermissions—one or more—had occurred.

In most cases delirium had not been present. In some cases there had been abdominal tenderness, tympanites, diarrhoea, though not ochre-colored stools, gurgling in the right ilial fossa in one case we examined, and hemorrhage from the bowels in at least seven or eight cases. In the case with gurgling repeated hemorrhages had occurred—hemorrhage followed by syncope and sub-normal temperature. In several cases there had been distinct relapses, and in one a second relapse with hemorrhage. In one case delirium was so violent that insanity had been suspected. A tremulous tongue was noted in most of the cases we saw. A recrudescence of fever in convalescents was not uncommon, and seemed connected usually with the commencement of partaking solid food. In one case the patient said it seemed to follow after taking a drink of whiskey.

Just at the outskirts of the town, in a little place called Olive, we saw two cases which the physicians pronounced typhoid-fever.

Three of the physicians stated that they were treating fully as many cases of fever in the country adjoining Caldwell as they were in the town. Many of those, however, were persons who frequently came to Caldwell to trade. No special measures had been taken by the board of health to prevent the disease. The physicians were unanimously of the opinion that there had not been a case of typhoid-fever in Caldwell, and the members of the board of health seemed anxious to have this opinion sustained.

From the history and appearance of cases seen, I felt obliged to differ with this opinion, and expressed the belief that while many of the eighty-eight cases might have been malarial-fever, some of them were undoubtedly typhoid.

As the disease was manifestly abating, there having been but two cases within the previous ten days, the investigation was left in the hands of five of the six physicians in the place who promised to send full reports of their cases, with such other information as might be desired.

Since writing this report I was informed by Dr. Martin, of Caldwell, that another case had died, and that a post-mortem examination had shown the ulcers of the bowels and other conditions peculiar to "typho-malarial fever." An *Enquirer* correspondent, who had visited Caldwell, had told

me, a day or two before, that the physicians at the autopsy had pronounced the case one of typhoid-fever.

I at once wrote to the board of health of Caldwell, and advised that a resolution be passed by the board asking all citizens to use nothing but boiled water for drinking purposes, and also to boil milk before using; to request disinfection of stools, clothing and bedding, in all cases of fever, and to give instructions for so doing.

It was further advised that these precautions be taken with all cases of fever unless clearly not typhoid. A package of typhoid-fever circulars was sent them for distribution.

INVESTIGATION OF DIPHTHERIA AT ATHENS, OHIO.

Information was received July 1st from Dr. H. M. Lash, of Athens, Ohio, of an outbreak of diphtheria at that point, two or three deaths having already occurred.

A package of circulars treating of the prevention and restriction of the disease was sent to Dr. Lash for distribution, with a request to furnish us a full report of the outbreak, when it had subsided.

On October 22d a communication was received from Dr. Lash, stating that after subsiding, the disease had again broken out in bad form, several deaths having lately occurred, and requesting that I should come to Athens and make an investigation.

I accordingly visited Athens on October 25th, where I was met by Dr. Lash, who most kindly devoted the day to my service.

Athens, I found to be a town of about 3,500 inhabitants, situated upon a number of hills in a horse shoe bend of the Hocking river. The water supply is entirely from wells, and uncemented privy-vaults are in general use. From the topography it necessarily follows that only such wells as are situated upon the summits of the hills are free from the danger of filthy drainage from houses on a higher level. Many of the wells are undoubtedly grossly polluted by surface water, and there is apparently great danger of the spread of those diseases which are usually conveyed through the drinking water.

Through Dr. Lash I made the acquaintance of Drs. Frame, Steele, Stimpson, Blakeley and Hill, who constitute the medical profession of Athens. From these gentlemen the extent and location of the disease was learned.

Dr. Lash stated that he had treated twenty cases of diphtheria since the preceding July; Dr. Blakeley four, Dr. Hill four, Dr. Stimpson about thirty, and Dr. Steele eight cases. Six deaths had occurred since the outbreak.

The first case was in a colored family named Hubbard, the patient, a girl aged 14 years, being taken with the disease the latter part of July. Dr. Lash was called to the case July 29th.

The house in which it occurred is situated at the east of the town, at the foot of a hill, a low, wet piece of land extending from the house to the Hocking river, a few hundred feet distant. A short distance from the house, at the foot of a hill, separated from the house by a shallow ravine, is situated a spring from which the family obtain their drinking water. This spring evidently receives much of the surface washings from the side hill above it.

Several dwellings with their privy-vaults, stables, etc., are located on top of this hill.

The most minute inquiry failed to establish the source of contagion in this case.

There had been no visitors, and no one of the family had been away from Athens. The clothes for the family had all been made from new material. There had been no chance for contracting the disease from a domestic animal, and no suspicion could possibly be attached to the milk.

The Hubbard family consisted of Mrs. H. and four children.

The patient was treated in the presence of all the others but no other cases occurred in the family, although no precautions were used to prevent the spread of the disease.

The second case occurred August 3d, in a colored family named Harris. This case was also treated by Dr. Lash, who informed me that he was unable to trace any connection either directly or indirectly between these two families.

Through the courtesy of Dr. Lash and Dr. Steele, I examined six cases of the disease, these being the only cases known of at this time.

The patients were all convalescent except one, which was brought to Dr. Steele's office on the afternoon of my visit. This case was in a family that had moved to Athens about ten days before, who were occupying a house in which there had recently been a death from diphtheria.

The family in which the death occurred had moved away, and had neglected to use proper precautions for disinfection.

A plat of Athens was secured, and with the aid of the physicians having had cases of the disease, the localities in which it occurred were designated. Reference to this plat shows, that while the disease was not confined to any one portion of the town, the majority of cases occurred

near the western border. Nothing relating to locality as a cause could be established.

The following cases witness the contagiousness of the disease:

Mrs. L. was driving by a house in which a child was dying of diphtheria. She was called in, the child dying a few minutes afterward; she remained and helped lay out the corpse. In some manner she wounded her hand; the wound, in a few days, became covered with a diphtheritic membrane, the constitutional symptoms being also well marked; there were no throat symptoms present.

A boy, in a family in which four cases and one death occurred, ran a splinter in his finger; this was removed by the mother, the boy and his sisters being sick with diphtheria at the time. The wound soon after became covered with a diphtheritic membrane, a large ulcer resulting.

Inquiry showed the disease to be not limited to the town, a number of cases being reported in the country adjacent. Upon inquiry as to what measures had been taken to prevent the spread of diphtheria, it was learned that the schools had been closed the previous week, though I was informed by the superintendent of schools that this had been done on account of slim attendance, and not as a preventive measure.

While schools were in session the teachers had promptly sent home children who were sick in any way, and also children coming from houses where diphtheria was known to be present. This information was gained by sending notes to the parents of absentees. If diphtheria or other contagious disease were given as the cause of absence, no children from that house were permitted to attend school.

A visit was paid to the mayor and to several members of council, and the establishment of a local board of health was urged as strongly as possible. The fact was pointed out that at least one case of diphtheria was due to carelessness; a man coming to their town to take up his residence, being allowed to move into a house in which a death from diphtheria had recently occurred, and the house not disinfected. It was suggested that if this patient died the city might be involved in a suit for damages, on the ground that the law providing for a board of health had not been complied with.

The mayor and members of council promised to bring up the matter of a board of health at the next meeting of the council, and take the necessary steps for its formation.

A public water supply of unquestionable purity, and the proper construction of privy-vaults were suggested as questions demanding consideration.

Under date of November 14, Dr. Lash wrote me that a few new cases

had occurred since my visit, with one death from membranous croup. A board of health had not then been established.

REPORT ON SALEM'S WATER SUPPLY.

In February, 1888, I was called to Salem, Ohio, to investigate the water supply of that city. A company had undertaken to supply the city with water for fire and domestic purposes. The proposition to accept the water-works was before council for consideration, and public sentiment was highly aroused over various reports regarding the impurity of the proposed supply. In company with members of the Salem Board of Health, members of council, physicians and other citizens, an examination of the proposed water supply was made, the following conditions being found:

Water is obtained from two sources, known as the "Whinnery Supply" and the "Silver's Supply."

The former consists of a flow from several springs and the surface drainage of about 1,000 acres of farm land, which unite to form a brook, a dam having been built across it forming a storage basin about one and a third acres in area, and with an average depth of about five feet. The principal supply of this brook in dry weather is Rogers' spring, situated about an eighth of a mile from the dam.

The water collected by this dam is passed through a filter-bed, about fourteen feet by twenty-one feet, composed of one foot of broken rock, and two feet of white sand, underlaid with drain tile. After filtering, the water is delivered through a six-inch pipe to the pumping station, about a mile away.

The other source of supply, known as the "Silver's Supply," presents some peculiarities.

For many years a large spring, known as the Silver spring, furnished water for a number of people in Salem.

It is situated on a side hill in what is now a populous portion of the city, and its overflow was stored in a basin of brick and covered.

The water-works company drilled two wells, one forty-seven feet deep, and about ten feet from the spring basin, the other eighty-eight feet deep, and about twenty-five feet from the basin. The shallow well is pumped during the day-time, and at night, by siphoning, the eighty-eight foot well is drawn from.

Four samples of water were collected, and the following report was

made to the Salem Board of Health, at the conclusion of the chemical examination of these samples:

COLUMBUS, OHIO, *March 13, 1888.*

To the Board of Health, Salem, Ohio:

Gentlemen: Having been called upon to make an examination of the water supply of your city, I have the honor to submit the following report:

On Saturday, February 25th, in company with representatives from your body, from the city council and from the water-works company, I examined the several sources of your water supply. Four samples were collected and sealed for chemical examination:

No. 1, from Rogers' spring; No. 2, at the filter-house, which represents the Whinnery supply *before* filtering; No. 3, from the well in the filter-house, which represents the same water after filtration; and, No. 4, at the water-works, taken from the discharge-pipe leading from the drilled-wells situated near Silver's spring.

A rainfall of twelve or more hours occurred just previous to the time of collecting these samples.

These waters were delivered direct to Prof. C. C. Howard, chemist of the Ohio State Board of Health, for examination, who gives the following as the result of his analyses:

Parts in 100,000.

No.	Oxygen required.	Free ammonia.	Alb. ammonia.	Nitrous acid.	Chlorine.	Total Solids.
1.	.15	.004	.012	trace	.25	43.0
2.	1.18	.020	.076	.001	.35	34.4
3.	1.15	.028	.092	.001	.42	36.0
4.	.17	.010	.012	.002	.92	29.8

The result of his analyses accord very strictly with the evidence obtained from the history of these different samples of water.

Sample No. 1, from Rogers' spring, is said to be a "fair" water. Here was found a spring enclosed in an old house, surrounded by boards decaying with age, and so situated as to render it probable that more or less surface drainage enters it. This water is usable, but could possibly be improved by properly guarding it from surface impurities.

Samples Nos. 2 and 3 represent strictly what is known as the "Whinnery Supply." This water is collected by damming a small brook supplied by Rogers' and other springs, and also the rainfall on a surface of about 1,000 acres. On this surface, consisting of forest and farm land, are situated some ten or twelve farm houses, with the usual barns, pig-pens, privies, etc. Stock, also, is permitted to graze freely over most of this drainage area. Part of the overflow from Rogers' spring passes through a barn-yard, which was found in a very filthy condition.

Situated on a hillside above Rogers' spring, but in a such a position as not to endanger the spring, was found a privy without a vault, the excreta being deposited on the ground. Surface water necessarily carries more or less of this fecal matter into the brook below which forms the "Whinnery Supply." Other farm houses, situated upon the area drained, were not examined, but we may infer that similar conditions obtain to a greater or less extent.

The discharges from a patient suffering with cholera, typhoid-fever, or other disease in which the specific poison is contained in the excreta, if placed in the privy spoken of, would, with great probability, be washed into the "Whinnery Supply."

The fact of this water being afterwards filtered does not lessen the dangers from such impurities. The filter, as constructed, is incapable of removing, to any great extent, suspended inorganic matter, and would have little or no effect on organic impurities.

For these reasons, and from the results of chemical analysis, we have no hesitation in condemning, for domestic purposes, the "Whinnery Supply" in its present condition.

Sample No. 4 is pronounced by chemical examination to be a "suspicious" water. The history of this water is somewhat peculiar.

A large spring, known as Silver's spring, is located not far from the center of your city. It formerly supplied a portion of the city with water which was collected in a covered basin or reservoir built of brick.

The Water Works Co. sunk two drilled wells, one about ten feet from this basin and forty-nine feet deep, the other about twenty-five feet from the basin and eighty-eight feet deep. The wells pass through about fourteen feet of sand and gravel to a sand rock, the upper layers of which are soft and shelly. The forty-seven-foot well is tubed for about sixteen feet, the other for about sixty-five feet.

These wells, or at least one of them, undoubtedly intercepts the supply of the old Silver's spring.

I learn that the well nearest the basin, the forty-seven-foot well, is pumped during the day, while the eighty-eight-foot well, by syphoning, is drawn from during the night. Furthermore, that the old spring basin partially fills while the deep well is being siphoned, while it is again lowered when the shallow well is pumped. This fact *may* indicate a separate source of supply for the deeper well, or it may possibly be due to the fact that the flow from this well, owing to imperfect siphoning, is much less than that from the other well, and hence the flow to the spring basin gains upon the siphoned well.

I learn also, that the water level in a number of wells north and east are lowered when the drilled well is pumped, to rise again at other times.

One well, the Bassett well, thirty feet deep and half a mile distant, is said to have gone dry when water was first pumped from the drilled wells, an abundant supply being found afterwards by sinking the well sixty feet deeper. The intimate connection of the drilled wells with the surrounding dug wells which these facts seem to indicate, the porous character of the soil, with no impervious layer above the water-bed, and numerous habitations which surround these drilled wells render it at least possible that their supply is contaminated by impurities carried down from the surface.

It should be borne in mind that sample No. 4 was taken during the day, and hence represents water from the *shallow* well.

The water from the old spring basin is undoubtedly drawn from by this well, and, as the basin probably receives both surface and ground water, and is liable to other sources of contamination, it is possibly, to some extent, accountable for the "suspicious" character of the water from this well. This water is liable to grow worse with time, and it would seem unwise to *commence* using a water which, both from history and chemical examination, would be pronounced "suspicious."

Facts gathered since our examination make it desirable that the quality of the water from the *deep* well be determined, and we would like to supplement this report with an analysis of samples of water collected, with proper precautions from this well.

In conclusion it may be said: 1st. That the use of the Whinnery supply would be attended with considerable danger, and should not be permitted. 2d. That the supply from the *shallow* drilled well should be looked on with suspicion, and not used if a better can be obtained; and, 3d. That the quality of the water from the deep drilled well is, as yet, not certainly determined, and should receive further investigation.

The problem of furnishing a sufficient quantity of sufficiently pure water to supply the present and future needs of your city is by no means an easy one, and has, apparently, not yet been solved.

Respectfully submitted.

C. O. PROBST,
Secretary State Board of Health.

March 22d, a sample of water taken from the *deep drilled* well was received from the Salem Board of Health, and at once placed in Prof.

Howard's hands for examination. The following results were obtained by him :

PARTS PER 100,000.

Oxygen Required.	Free Ammonia.	Albuminoid Ammonia.	Nitrous Acid.	Chlorine.	Total Solids.
.22	.018	.020	.001	.32	26.4

A letter was addressed to the Salem board as follows:

COLUMBUS, OHIO, *March 29, 1889.*

To the Board of Health, Salem, Ohio :

GENTLEMEN: The sample of water received from A. J. King, member of your board, obtained, according to his statement, from the deep well at Silver's Spring, has been examined by our chemist, whose report I enclose.

The analysis does not determine whether the deep and shallow drilled wells at Silver's spring get their supply from the same source. The waters resemble each other in a general way, and yet present points of difference, which may be due to the fact of their coming from different sources, though, as has been said, this is not certainly determined. The analysis would indicate that the water from the deep well is of worse quality than that from the shallow well. The position taken in the former report is still maintained, viz.: That what is known as the "Silver's Supply" water is at best a "suspicious" one.

Very respectfully,

C. O. PROBST, *Secretary.*

REPORT OF AN INVESTIGATION OF CHEESE POISONING.

BY THOS. C. HOOVER AND C. O. PROBST, COMMITTEE.

A large number of cases of sickness from eating cheese were reported to the Board during the year 1888.

In June, Dr. H. P. Havens, of Urbana, reported about 60 cases in that city; Dr. B. S. Leonard about 40 cases at West Liberty, Logan county; and 10 or 12 cases were reported by Dr. H. L. Preston, of Mutual, Champaign county. These cases were all traced to cheese made by Messrs. Saxbee & Needham, who have a small cheese dairy near Mechanicsburg, Ohio. Within a few days after these cases were reported, Dr. R. Harvey Reed, health officer of Mansfield, reported fifty cases or more occurring in that city, and the following week Drs. A. Rhu and A. W. Crane reported 50 cases in Marion. Soon after the report of these cases, Dr. Frank Young, of Weymouth, Medina county, reported 6 cases, all in one family.

The cases at the three last named places were all traced to eating cheese made by Mr. F. B. Clark, who has a small cheese dairy near Medina.

In the latter part of June Dr. B. B. Loughhead, of Ravenna, reported ten cases, confined to two families.

The cheese eaten was made by factory No. 430, New York State.

We were unable to secure a sample of this cheese, but communicated with the State Board of Health and State Dairy Commissioner of New York regarding it. An investigation was promised, but nothing has been heard from there.

July 12, Dr. Thomas F. Keller, of New Washington, Crawford county, reported a number of cases of cheese poisoning—the exact number not known—at that place. We were unable to trace positively the maker of this cheese, though it possibly came from Horr, Warner & Co., whose letter in regard to it, is of sufficient interest to publish, and will be found on a subsequent page.

In December, Dr. J. F. Miller, health officer of Cambridge, Ohio, reported forty-six cases of cheese poisoning in that city.

The cheese in this instance was made by C. H. Wright, of Wellington, Ohio.

We have also included in this report a history of six cases of cheese poisoning which occurred in Akron, in December, 1887.

The cheese in these cases was made at the West Ellery cheese factory, at Bemus Point, Chatauqua county, New York.

Parts of the cheese which had caused sickness in persons at Urbana, West Liberty, and Mutual, and which were made by Saxbee & Needham, were secured for analysis; also part of a cheese, made by the same firm, which caused sickness of several members of Mr. Saxbee's family.

An urgent request was received from Saxbee & Needham to inspect their dairy, and endeavor to learn the cause of their trouble. A visit was made these gentlemen June 26th. Their cheese-making had been completely suspended on account of the trouble, and they were most anxious to discover the cause of the bad cheese they had made. By an inspection of their cheese dairy, the following facts were learned:

The cheeses which caused the sickness were made by Mr. Needham from the milk of twenty-three cows, kept in a pasture adjoining his house. This pasture was a field in grass, about thirty acres in extent, with a small brook running through it, from which the cows obtained their water. There was apparently no cause connected with the food or water supply to account for the trouble. The cows presented a healthy appearance, and there had been no sickness among them.

One cow, called the "Henry cow," had, on the morning previous to our visit, given milk having a bitter taste. We secured a quart from this

cow, milked directly into a clean fruit-jar, which was carried open to the cheese-house, and cooled in a spring of water.

We next visited the cheese-house. This was found to be a small, one-roomed house, fitted with a Roe's cheese-vat, and a pump connected with an adjoining spring of water. The vat contained the night's and morning's milkings, but on account of the trouble with the cheese recently made, cheese-making had been suspended.

According to Mr. Needham, their process of making cheese is as follows: The night's milk is poured directly into the cheese-vat, which is surrounded with water; the water is drawn off and replaced with cold water, as it becomes warm. After stirring the milk a time, ice is added, both to the water around the vat, and directly to the milk. The milk in this way is cooled to about 70° Fahr. The ice used is taken from a pond of clear water, which has furnished ice for a number of years to cheese-makers in that neighborhood.

The morning's milk of the next day is added to the milk in the vat which is not skimmed, and the whole is raised to a temperature of about 85°, a thermometer being used. The rennet is then added, and the milk allowed to curd. The curd is finally divided by a curd-knife and salted, 2 oz. of salt to five gallons of milk being used. The temperature is then raised to 105° to 110°, after which the curd is transferred to a screw-press, two cheeses of about thirty-five pounds each being made daily.

After pressing, the cheeses are removed to a curing-room, which is a room about 10x12, a part of Mr. Needham's house, and adjoining his kitchen. There is but one window in this room, and the temperature—from the sun's rays and from the kitchen fire—is no doubt at times quite high.

The aim is to allow two weeks for the curing process, but the demand for new cheese had lately led them to send out cheese not more than eight or nine days old. The cheese looked and smelled very nice, but it was noticed that nearly every cheese in the room—some 25 or 30—was decidedly bulged. Everything about the curing-room, as well as the cheese-house, was scrupulously clean and in good order.

The whey from the vat in the cheese-house was run into a barrel just outside, and from there to a trough about twenty feet away, where it was fed to hogs.

The rennets used were procured from Roe, of Chicago, Ill., and are known as the "Bavarian rennet." Everything indicated that the greatest possible care was being taken to insure good healthy cheese.

We next visited the cheese dairy of Mr. Coffee, who lives near Mr. Needham. The process of manufacture was exactly the same as at Mr. Needham's, the same kind of rennet being used, and the cows obtained

water from the same stream as Mr. Needham's cows. Mrs. Coffee, who made the cheese, stated that they had had no trouble with their cheese lately, but that two years before they had some cheese which produced sickness. They claimed to have found, at that time, one cow giving bad milk—milk which made Mr. Coffee sick when he drank it. On eliminating the milk from this cow, they said, the trouble ceased.

We visited several cheese dairies in that neighborhood, but found no report of bad cheese. The process of making was essentially the same in all. The milk secured from the "Henry cow" was carried to Columbus and fed to some kittens. No bad effect followed.

Some time after our visit, Mr. Needham, by our advice, tried making cheese twice a day, as it had been suggested that the cream rising on the night's milk, which he was trying to work into his cheese, might, by putrefactive changes, be the cause of the trouble. This was done, but the cheese made produced sickness in some of his neighbors who ate of it. (He did not attempt to sell any of his cheese at this time.)

He next moved his whey-barrel, took up the floor of his cheese-house, and found that whey had saturated the ground under the house and produced a bad odor. He cleaned up very thoroughly, using lime and dry earth, and, with new rennet and with great care, made another batch of cheese. This also proved bad. He then moved his vat into another house, but cheese made there also produced sickness. Cheese making was then abandoned.

The Mechanicsburg Creamery Company wrote, asking if it would be safe to manufacture butter from cream from the milk of these cows. As the sickness was then supposed to be due to tyrotoxin, which, so far as known had not been found in butter, and as the milk from these cows had several times been fed to kittens with no bad results, we sanctioned the use of the cream. The cream was used for some time in making butter with, apparently, no bad effect. Soon after this time, Mr. Saxbee withdrew from the business, taking half the cows.

Mr. Needham wrote us, under date of November 3, saying he had found one cow which gave bad milk; that the bad milk all came from one teat, and when this cow was suckling its calf, the calf had always refused to suck this teat. He stated, further, that after the cows were divided at the time of dissolving partnership, and after keeping out the milk from the suspected cow, he had had no trouble with cheese he made. The result of chemical examinations of cheese made by Mr. Needham, which produced sickness, are given on another page.

On July 5 we went to Medina and visited the cheese dairy of Mr. F. B. Clark, who lives about two miles from Medina.

The cheese that caused sickness at Mansfield, Marion and Weymouth was made here.

We found Mr. Clark an intelligent gentleman, a graduate in medicine, and a cheese-maker of thirty years' experience.

He commenced making full cream dairy cheese in the spring of 1885, and gave the following history of his cheese making since that time.

He first made cheese as follows:

The night's milk was placed in a vat and cooled to 75° or 80° F. In the morning the cream was removed from the night's milk, the morning's milk added to the skimmed milk, and the whole raised to a temperature of 82°.

The cream that was removed was then warmed to the same temperature, strained and added to the milk with sufficient calf's rennet to coagulate it in from twenty to thirty minutes.

The curd was then cut in cubes one-half inch in size, and soon after, still further divided. The mass was then raised to a temperature of 100° F. When acid began to appear in the curd the whey was drawn off and two and one-half pounds of salt to one thousand pounds of milk was added.

The curd was then put to press for twenty-four hours.

The cheeses were placed on shelves to cure, in a room kept at a temperature of about 75°, and six or eight weeks allowed for curing. The first sickness from his cheese occurred in February, 1887, from two cheeses made in October, 1886.

Next year he placed his cheese on the market much younger, thinking, as he said, that the trouble was due to putrefactive changes caused by the cheese being in cure too long.

That year many cases of sickness came from eating his cheese, all that were made in September and October being bad. In April, 1888, he commenced making cheese again, and tried cooking the curd until it was more acid, and also increased the amount of salt, using two and three-quarter pounds to one thousand pounds of milk.

The same trouble appeared about the middle of the following May, all the cheese made between April 15th and May 18th, being very bad.

The cheese sold at Mansfield and Marion was of this lot.

Commencing May 19th, the cream from the night's milk was kept out, two and one-half pounds of butter from each four hundred pounds of milk being made. June 11th, forty cheeses made in this way had been sold, and no trouble from them reported. Mr. Clark found at this time that he was putting the curd to press at 92°, and thinking this too hot,

began to cool the curd—after salting—to about 75° or 80°, leaving the curd spread thin for one or two hours.

Mr. Clark writes that up to August 19th, he had placed one hundred and eighty cheeses on the market, and all made since May 19th, and has heard of no sickness from any of them. It thus appears that nearly all the cheese he made this year, prior to May 18th—with cream all retained—was the cause of sickness, while from the 19th of May to August 19th—the night's cream being removed—no bad cheese was made.

Mr. Clark's cheese-making is carried on in a small room connected with his house. Everything about the cheese-room, including vats, utensils, etc., was found scrupulously clean. The surroundings were good, no bad odor being observed.

There was nothing, so far as could be learned, in connection with the cows or their food or drink, that could in any way account for the trouble.

Mr. Clark holds the theory that the sickness is caused by putrefactive products, which may be found in the milk, either before or after it is made into cheese. That this change may take place in the cow's udder, when the animal is diseased, or may be caused by improper care in handling the milk before making into cheese. In his own case he thinks the trouble came from putrefactive changes in the cream from the night's milk which was retained, but not acted upon, by the rennet.

That something more than this is involved seems plain, from the fact that the majority of full cream cheese-makers do retain the night's cream; and usually without trouble of this kind.

Mr. Clark attempts to explain this by claiming that, in making full-cream cheese in the ordinary way, the cream from the night's milk is *not* retained, but escapes with the whey, the rennet having no coagulative action upon the cream. But Mr. Needham, it will be remembered, made cheese twice a day, immediately after milking, not allowing the cream to rise, and still produced bad cheese.

CLINICAL HISTORY.

The attempt to secure a complete history of cases resulting from ingestion of cheese, and which led to this investigation, has not been attended with the desired success. A letter was addressed to each physician who had reported cases, asking for a history of those he had treated, and we managed to secure a general description of the disease as observed by several.

The symptoms were as follows: Nausea, pain in abdomen, vomiting, purging, thirst, cold surface and extremities. In some few cases there was syncope after prolonged vomiting. The character of the vomit was first the ingesta recently taken, then acid mucus mixed more or less with bile. In

one case, reported by Dr. Leonard, the ejection was streaked with blood. The dejections were first watery feces, afterwards frothy mucus, mixed with bile, and in Dr. Leonard's case, already mentioned, traces of blood. In some cases dilatation of the pupils was noticed. The pulse was generally rapid, and more or less feeble. The thirst was very intense in some cases. The abdominal pain did not seem to be a prominent symptom, as it was not mentioned by a majority of the reports. The "constriction" of the throat, observed by Prof. Vaughan, was not noticed in a single case.

The treatment resorted to was various, but generally of the character exhibited in cholera-morbus. Anodynes, demulcent and alkaline drinks, with rest and supporting measures. No fatal cases were reported; all affected cases recovered in comparatively short time.

The history of these cases does not present a single symptom which can be considered pathognomonic of tyrotoxicon poisoning, and was only called so for the reason that most of the cases followed the ingestion of cheese in a shorter or longer time. Some few of the cases occurring first were called cholera-morbus, treated as such, and made good recoveries. It must be borne in mind, also, that many persons partook of the same cheese without any resulting sickness. In one family seven ate cheese and only three were made sick; in another, four partook of a new cheese, and one was sick. One of the manufacturers, whose cheese had produced sickness, alleges that he redeemed about one hundred pounds and took it home. He and his family consumed it without deleterious or unpleasant results.

Was the disease simply the result of ingestion of new cheese and subsequent chemical changes in the digestive track producing the gastrointestinal irritation? Or, did the cheese contain a poison? Our chemical and physiological tests positively prove that tyrotoxicon was not the poison, if any poison was present. Is there another poison contained in cheese which has not been isolated?

Lastly, did the cheese ingestion have any causal relation to the disease, or was the sickness merely coincidental. The time elapsing after eating the cheese and before the first symptoms were noticed varied from one to six hours. Nearly as many ate the cheese who experienced no unpleasant results as there were who became sick. All the cases reported occurred in the hot season. Was it cholera-morbus?

THOS. C. HOOVER, M. D.,
Member of Committee.

The following letters have been selected as giving the symptoms in individual cases:

URBANA, OHIO, *June 15, 1888.*DR. C. O. PROBST, *Columbus, Ohio:*

DEAR SIR: Yours of the 14th is at hand, and contents noted. I was called to treat thirteen cases of the cheese poisoning, all having the same train of symptoms, but varying in intensity. My worst case was that of a child six years old; he had eaten of the cheese, a sample of which I first sent you, at six o'clock in the evening, and commenced vomiting at ten o'clock the same evening. I was called in at half-past eleven, and as there were three other members of the family suffering with the same symptoms, I had no trouble in soon satisfying myself as to the cause; all members of the family who had partaken of the cheese were either sick or became sick during my call. None of them had eaten heartily of it, as they all remarked an unpleasant, bitter taste. The six-year-old boy had eaten about one-third of a slice of the size of my first sample.

Now for his symptoms: Temperature 99, pulse 135, extremities cold, vomiting about every five minutes, attended with violent retching and followed by syncope in nearly every instance. The ejections were tinged with green and consisted mostly of frothy mucus; reaction was slow in his case, and collapse was threatened, but he came around in about twenty-four hours and made a good recovery. I had an opportunity here to note the early symptoms in two cases. The first symptoms complained of were a sense of fullness in the stomach, with oppression, and on assuming an upright position immediate and violent emesis, of large quantities of a dark-green fluid; this would be followed with a few minutes of perfect repose, then a repetition of former symptoms. Emesis was developed in from four to six hours after eating the cheese. I have not learned of a single case developing earlier than four hours. The quantity eaten did not seem to make any difference, that is, those eating sparingly were just as sick as those who ate freely. In all cases that I saw, there was perceptible rise of the temperature and circulation from the commencement to the close; there was also, in all cases, a moist, clammy skin throughout.

It is very difficult to ascertain the number of persons affected, as many did not call in medical aid. I have been able, however, through the courtesy of the physician and grocers, to trace fifty-eight cases.

If I can do anything further to aid you in your investigations, I shall be glad to respond to your suggestions.

Very truly yours,
(Signed)

H. P. HAVENS, M. D.

Case No. 1: I saw James K., aged about 55 years, at one o'clock on the morning of June 10, 1888. Patient was vomiting and purging; had been sick for two hours; countenance pale; surface of body and extremities cold; finger-nails and lips purple; pulse rapid (120) and very feeble; at times pulse would become slower (80), but was always feeble; pain of a cramping character over abdominal region; vital powers greatly depressed; pupils normal. There was no feeling of constriction of the fauces, but there was dryness of the throat, as I believe due entirely to the enormous loss of fluid by severe purgation. The vomited matter consisted almost entirely of water, with some shreds of mucus, streaked with blood; there was a considerable amount of this substance, and an occasional lump of cheese. The cheese had nearly all been ejected before I saw the case. That which was passed per anus was like rice water, with the same mucus and blood as described above, and an occasional small chunk of cheese. All of the cheese that was passed, either by the mouth or from the bowels, came in lumps. This case was treated as a severe case of cholera-morbus, and recovered within a day. The patient had eaten cheese and crackers at 9 o'clock p. m. the night before. In this case cheese was not suspected.

Cases 2, 3 and 4: Mrs. R., aged 60 years, and daughters Della, aged about 30, and Emma, aged about 27, all eat of the same cheese as case No. 1, but took sparingly of it for breakfast. The mother and eldest daughter took sick at about 10 o'clock, a. m., and the youngest an hour or more later. Cases similar to that of No. 1, but not so severe;

did not eat so much cheese. Nos. 2 and 3, being enfeebled by other infirmities, were quite sick. They vomited and purged, suffered severe cramps in the bowels, more noticeable in region of umbilicus, where pain seemed to concentrate. These cases were treated by hypodermic injections of morphine and sulph. atropia, and made a good recovery. Case No. 4 was not very ill, vomiting the contents of the stomach, and one or two large operations from the bowels, with some pain, which lasted two or three hours, followed by timely recovery.

Cases 5, 6, 7, 8 and 9 were seen in consultation with Drs. Fulwider, and B. B. Leonard, to whom I am indebted for this history. The patients, being Mrs. John D.——, aged about 42, George, aged 16, Arus, 8, Robert, 6, and James, 3, had eaten of the same cheese at 7 o'clock a. m., and were all taken sick in from one and one-half to two hours, the three older ones doing very well under the treatment heretofore described. The two younger members of this group of cases did not fare so well. They were taken with violent vomiting and purging; lips and finger-nails purple; pupils normal; eyes glassy; pulse became imperceptible, and remained so for six hours. Both were in a stupor for six or eight hours, from which they were with difficulty aroused. They were treated as were all the others, except no opiates were given, with the addition of hypodermic injections of brandy and the application of external heat. The discharges from the bowels, as well as the vomited matter, contained mucus tinged with blood. There was some swelling over the abdomen for three or four days, and within ten days there was complete recovery. John, the father of this family, partook of the cheese with the rest of his family, but was not in the least affected. The toxic effects of the cheese was not suspected in the first case, but was made sure when the second case was seen.

There were about thirty other cases reported, very few of which required the services of a physician, and all recovered. The experience of these patients was severe while it lasted, but no ill effects seem to remain with them.

DR. B. S. LEONARD, *West Liberty, Ohio.*

MANSFIELD, OHIO, *June 16, 1888.*

DR. C. O. PROBST, *Secretary State Board of Health, Columbus, Ohio:*

DEAR DOCTOR. I herewith enclose you morning and evening papers, or, rather, clips from the same, which will give you a fair idea of the racket we had last night, in our city, from the use of bad cheese.

From what I can learn there must have been not less than fifty persons made sick from eating this cheese. I saw some twenty myself. They all got the cheese from the same source, and men, women and children who ate of it got sick in from one to two hours, on the average, after eating it, with intense nausea, vomiting, and, in numerous cases, purging, with intense thirst and a burning in the stomach, with a slow, weak pulse, cold extremities and a sort of general collapsed condition. Usually their tongues were very red. The matter vomited, after emptying the stomach, was an offensive-smelling, watery, substance, of a clear or greenish or brownish color, varying in different cases. I don't think any deaths will occur. The most of the victims are better to-day, although some are still sick and in bed, and nearly all complain of their stomachs paining them to-day.

I had the vendor arrested and got out of him the general history reported in the papers, in order to trace the cheese to its source. I am satisfied that it is the result of tyrotoxicion, yet I thought it was advisable to send you some for examination by Prof. Howard.

Please send me the result of the chemist's examination as soon as you get it, and oblige, in haste, yours,

R. HARVEY REED, M. D., H. O.

P. S. Samples were sent to-day by express, prepaid.

WEYMOUTH, O., *July 12, 1888.*C. O. PROBST, *Secretary Ohio State Board of Health, Columbus, O.:*

SIR: I was called the eve of June 7th to see a family consisting of six persons, husband, wife and four children, who had been eating cheese for supper. The lady was vomiting, had pain in the stomach, bowels running off every hour (thin watery discharge, not offensive), excessive thirst. Temperature normal. Balance of family with about the same symptoms, except no discharge from the bowels. Vomiting commenced in about four hours after eating the cheese, and continued from four to six hours.

Cheese was made by Mr. F. B. Clark, of this place, and is known as a full cream cheese.

Yours truly,

FRANK YOUNG, M. D.

NEW WASHINGTON, O., *July 12, 1888.*

C. O. PROBST, M. D.:

DEAR SIR: Your letter of the 11th inst., asking for a full report of the number of cases of cheese poisoning that came under my observation is at hand, and I will reply in brief to the same at once.

I was fortunate or (unfortunate) enough to see the cases that were similarly affected by eating of the cheese, say from six to twenty-four hours afterwards. The parties all spoke of its rancid or bitter taste while eating, and shortly afterwards a biting or stinging sensation along a part, or the entire alimentary canal.

All were seized with pain in the stomach and bowels, followed with vomiting, and subsequently diarrhœa.

In examining the mouth, throat, tongue, including the rectum in one severe case, I found the mucus membrane thinly covered with small, broken, angry and irritated patches, varying in size from a flax seed to an eighth of an inch in diameter. The outlines or borders of these suppurative patches, were irregular in some instances, and circular or uniform in others, while the centers of all were covered with a greyish-colored mucus, extremely acid to litmus paper. The balance of the unbroken mucus membrane seemed subnormal in color and texture, as long as these broken surfaces were suppurating.

Temperature taken under the arm in each case ranged from 99° to 102° for two or three days after the symptoms became prominent.

The saliva was highly acid. Stools frequent, painful, watery, streaked with blood, greyish in color, acid, and very offensive in odor.

Respectfully yours,

THOS. F. KELLER, M. D.

CHEESE POISONING AT AKRON, OHIO.

The following correspondence and report of chemical analysis will present the results of an investigation of poisoning at Akron Ohio :

AKRON, O., *December 27, 1887.*C. O. PROBST, M. D., *Columbus, O.:*

DEAR SIR: Yours of the 26th inst. came to me in due time, and I hasten to reply. I ordered the grocer to-day to send per express two pounds of the suspected cheese, and will see the physician to-morrow who had charge of the cases, and procure a report. I now expect to be in Columbus on Saturday, December 31st, and will be at the Neil after four P. M. I would be glad to meet you; and I may be able to give you some further information. I remain, sir,

Very truly yours,

DR. L. S. EBRIGHT, H. O.

REPORT OF ATTENDING PHYSICIAN.

AKRON, O.

At eleven P. M. December 23, I was called to the family of Mrs. O., which consists of herself and five daughters, aged 17, 19, 20, 21, 23. The mother stated that she thought they had all been poisoned by eating cheese at supper. They had purchased the previous evening some so-called York State cheese, and all had taken quite freely of it, especially Anna, aged 21. As a result, she suffered the most severely. I found her in a state of collapse, extremities cold, etc. This condition followed excessive vomiting and purging, which was preceded by a burning sensation in the mouth, fauces and esophagus. She complained of a dull, heavy sensation in the region of the nape of the neck, which before my arrival had been very severe. Not knowing of any antidote for tyrotoxicosis, and having the extreme prostration before me, I at once administered hypodermically, $\frac{1}{160}$ atropin, and ordered hot applications about the body, to establish artificial warmth. As soon as it could be retained, I administered stimulants, and within an hour she was much improved. None of the others suffered so severely. May, aged 23, and the mother were quite ill, having the same symptoms, but were not so depressed. Abbie, Ida and Libbie were having the burning sensation in fauces, etc., and felt as they expressed it, "deathly sick." An emetic of warm water, salt and mustard afforded prompt relief. Upon calling the next morning I found all apparently none the worse for their experience of the night before, excepting Anna, who was very weak, and did not fully recover for several days.

Learning that the cheese in question had been purchased of Weideman & Co., of Cleveland, Ohio, a request was made of them to furnish us any facts known regarding its manufacture.

The following letters in answer were received:

CLEVELAND, O., January 23, 1883.

C. O. PROBST, M. D., *Secretary Ohio State Board of Health, Columbus, O.:*

DEAR SIR: Your valued favor of the 21st at hand, and we now forward same to the West Ellery Cheese factory, at Bemus Point, Chautauqua county, New York, with the request to give us a full description of mode of manufacture, material, etc., and we hope to be able to report to you in a few days. Sample sent is from the same lot we had other complaints—the output of the factory September 10, 1887.

Respectfully,

WEIDEMAN & Co.

BEMUS POINT, January 30, 1888.

MR. WEIDEMAN & Co.:

GENTLEMEN: I am requested by Mr. Furlow, our salesman, to answer your letter of the 21st of January, he being sick. I would say I deeply regret that anything of this nature has developed, for it is as much a mystery to me as it is embarrassing to you. We can not make any explanation of the cause, because we do not know any. The same care was taken of our milk on the 10th day of September as it was on the 11th day of the same month. On the 11th we made some cheese for our patrons and they are pronounced fine. We used the same care, and the test of the curd was the same on each and every day. We used no milk that we could detect anything wrong with. Our material that we use is of the best that we can procure; our rennets are of the best, and are not allowed to stand in the liquor until they scent. We are very careful on that point. If there is anything of a poisonous nature, we cannot account for it. If it was in the milk we did not know of it, nor could we detect it. We made a good many cheeses for our patrons in September and October, and have not heard a word of complaint. On the 10th day of September there were 12 cheeses made. I would like you to state how many cheeses are affected. There were six in each vat. I would like to know if it affected both vats.

If it was something that the cows have eaten, some poisonous weed, it might not affect both vats.

Our mode of manufacturing is the same we have always used, and the same care taken of our cheese. Please to inform us the extent of the injury done by eating of the cheese. If there was poison in the cheese, it has developed from the same way of manufacturing that we have always used, and you have had nearly all of our cheese. If it was something in the milk, or put in the milk, we could not detect it.

With respect, I remain yours,

W. L. BARNES.

REPORT OF THE CHEMICAL EXAMINATION OF CHEESE IN CASES OF CHEESE POISONING.

BY C. C. HOWARD, M. SC.

There have been submitted to me for analysis, at various times during the past year, samples of cheese that was supposed to have caused symptoms of poisoning in those that had eaten of it.

The first sample came from Akron, and weighed but about one-half pound. This limited quantity was submitted to an examination for the detection of tyrotoxin according to the method of Professor Vaughn. The cheese was cut in small pieces and rubbed in a mortar with distilled water, the mass placed on a filter and exhausted with water. The aqueous extract which was acid in reaction, was rendered slightly alkaline, with sodium carbonate, transferred to a mixing cylinder and a half volume of pure ether added, and the whole shaken. The ethereal extract, which separated slowly, was removed, passed through a paper filter and received in a large glass capsule. After spontaneous evaporation there appeared a slight residue. This was taken up with water, slightly acidulated with acetic acid, sodium carbonate added to alkaline reaction, and also pure ether, and the whole shaken. The ethereal layer was removed to a large watch-glass and allowed to evaporate spontaneously. A slight residue, crystalline in character, was obtained. As the quantity was limited, no part was taken for a physiological test, but the entire residue used for chemical tests. With ferric chloride and potassic ferri-cyanide Prussian blue was developed, showing the presence of a reducing body. A mixture of sulphuric acid and carbolic acid gave, with another portion, a yellowish color. The quantity obtained was too small to permit the production of the more characteristic potassium test for tyrotoxin, and the identification of this body as tyrotoxin rests on the by no means characteristic reaction with sulphuric and carbolic acids. A larger quantity of cheese would probably have secured the preparation of a quantity of this residue sufficient to have subjected it to the characteristic tests for tyrotoxin and, doubtless, its identification as that substance. I am aware that the evidence is not sufficient to justify a positive statement that tyrotoxin was isolated.

During the summer several samples of cheese were sent in for analysis. These were as follows: One sample each from Urbana, Mutual, West Liberty, Marion, Mechanicsburg, two from Medina, made in 1888, with one made in 1887. Also a sample of milk from the Mechanicsburg dairy, such as was used in the manufacture of the cheese. All these samples came from two factories, that at Mechanicsburg and that at Medina.

These samples, weighing from four to six pounds, were submitted to an examination for the detection of tyrotoxin by the method already described. Although the quantities taken were in all cases much greater than in the small sample of cheese received from Akron, the residues obtained from the spontaneous evaporation of the ethereal extract were in all cases extremely minute, and presented no traces of crystalline form. In

some cases, slight bluing was obtained upon the addition of ferric chloride and potassic ferrieyanide. In one sample, that from West Liberty, the residue was administered to a young kitten without any effects being produced.

A sample received from Cambridge has also been examined. Six and one-third pounds were taken and examined by the preceding method. The residue obtained was the slightest, with no trace of crystalline form. No reaction with ferric chloride and potassic ferrieyanide could be obtained. A portion of this cheese, weighing one hundred grammes, was eaten by myself, but no unpleasant effect was perceived.

As the quantities of cheese taken in these cases were considerable, and no evidence of the presence of crystalline body could be obtained, I am constrained to believe that the poisonous effects of these samples were due, where present, to some agent other than tyrotoxin.

The existence of this highly interesting body has been fully demonstrated by Professor Vaughan. That it does exist in milk and cheese at times and causes serious symptoms of poisoning has been proven on various occasions. I think it was present in the cheese received from Akron. To assume that all cases of cheese-poisoning are caused by tyrotoxin is an idea that is not borne out by the facts recorded.

Respectfully submitted.

C. C. HOWARD, *Chemist*.

CHEESE POISONING AT CAMBRIDGE, OHIO.

In December, 1888, a report was received of cases of cheese-poisoning at Cambridge. Dr. J. F. Miller, health officer of Cambridge, kindly furnished a report of the cases and secured several pounds of the cheese for examination. The following letter was received from Dr. Miller:

CAMBRIDGE, OHIO, December 13, 1888.

DR. C. O. PROBST, *Secretary State Board of Health, Columbus, Ohio*:

DEAR DOCTOR: I send you a history, as complete as I can make it, of cheese poisoning occurring in Cambridge, Ohio, in the latter part of the second week of December, 1888. No deaths occurred, but several were very sick. The symptoms were very free vomiting, and, in the worst cases, a deathly sickness or nausea; in some cases cramping and purging; in the lighter cases very little nausea, but free vomiting; a few had pain and cramping, and, in very few, diarrhoea; no dryness or constriction of fauces; in bad cases some thirst, but not great; in some, after the stomach was fully emptied, vomiting ceased; but in the severe cases hard retching kept up for some time, with a small amount of yellowish vomit. Free emesis was the leading symptom. The elder Nicholson child came near dying, as did also the year-old child of Wm. Duffy. My little girl had two attacks, having eaten of it the second time before we learned of the poisonous character of the cheese.

I sent you to-day, by express, about twelve pounds, or all that remained of the cheese in question. The grocers had another one uncut, which they sent back. The cheese was made by Charles H. Wright, Wellington, Ohio, and Keepers & Duffy bought direct from them.

Orville Duffy, of the firm of Keepers & Duffy, ate, he thinks, nearly one-half pound, yet did not even have nausea. I ate heartily of it at three different times, yet no nausea was produced. Just about one-half of those who ate were made sick.

Respectfully,

J. F. MILLER, H. O.

Dr. Miller learned of 46 people who had eaten of the suspected cheese. Exactly one-half of these were made sick. As a rule children were more

seriously affected than adults. The symptoms appeared within from thirty minutes to three hours after eating.

A letter was addressed to Mr. Wright, of Wellington, manufacturer of the cheese, who replied as follows:

WELLINGTON, OHIO, *January 2, 1889.*

DR. C. O. PROBST:

SIR: In reply to your letter of the first inst., will say, the two cheese shipped to Keepers & Duffy, of Cambridge, Ohio, were made the 14th of October. They cut one of them and sent the other one back to me. I took the cheese returned to one of our Wellington dealers, and had it cut. I saw them to-day, and they say they fail to find anything bad about it. They have sold one-half of it, and some of the customers have come back for more. I do not understand why that one cheese should make people sick and all the rest of the season's make, including the remainder of that day's make, be all right. I have been in the cheese business about ten years, and this is the first complaint of this kind I have ever had.

In regard to the manufacture of our cheese: We heat the milk to about 82° to 84°, to apply the rennet, and let it stand from forty to fifty minutes before it is ready to cut, and then heat to about 102° or 104°, and hold it there until it is ready for the drainer, when the whey is drawn off, and the curd is cooled and salted for the press.

Our cheese is free from coloring, or any adulteration of any kind, and the rest of that same date is all gone, and we have not heard any complaint.

Respectfully,

C. H. WRIGHT.

WELLINGTON, O., *January 15, 1889.*

MR. C. O. PROBST:

SIR: Yours of the 7th at hand. In reply will say, the night's milk was run into the vat at night and cooled, and in the morning we took off the top cream that would not work in, and put in some new milk and made it up. The balance of the morning's milk was worked up without being skimmed, but the cheese were so near alike we were compelled to mark them to tell the difference. That day's cheese are all gone, and I can not tell whether the cheese sent to Cambridge were full cream or not, but if they were not full cream they were very nearly so.

Respectfully,

C. H. WRIGHT.

The sample of cheese sent by Dr. Miller was placed in the hands of Prof. C. C. Howard for examination for tyrotoxin. Prof. Howard has submitted the following report:

COLUMBUS, OHIO, *December 30, 1888.*

DR. C. O. PROBST, *Secretary Ohio State Board of Health:*

DEAR SIR: The sample of cheese from Cambridge, Ohio, has been submitted to an examination for the detection of tyrotoxin.

Six and one-third pounds of the cheese was cut up and rubbed in a mortar with distilled water, placed on a filter and exhausted with distilled water until the soluble portions had been washed out. The filtrate, which was slightly acid, was rendered slightly alkaline with sodium carbonate and shaken with a half volume of pure ether. The ethereal layer was removed, the aqueous extract again shaken with ether, and this ethereal extract added to the first, and both extracts allowed to evaporate

spontaneously. There appeared, on evaporation, a slight residue, which was taken up with water acidulated with acetic acid, rendered alkaline with sodium carbonate, and again extracted with ether. The ethereal extract was allowed to evaporate spontaneously, when scarcely an appreciable residue was left.

One hundred grammes of this cheese were weighed out and eaten by myself. No effects of any kind, so far as could be perceived, followed the eating and digestion of this cheese.

From the results of the chemical examination, as well as from the physiological test, I am entirely satisfied that no substance capable of producing the marked effects of tyrotoxinon was present.

Very respectfully,

CURTIS C. HOWARD, *Chemist*.

REPORT OF CASES OF ICE CREAM POISONING AT RANGE, OHIO.

RANGE, OHIO, July 9, 1888.

C. O. PROBST, M. D.:

DEAR SIR: A school picnic was held here recently, where ice cream, lemonade, cake, etc., were served at about 2 o'clock P. M. That evening fully four-fifths of all the people present were taken violently sick with symptoms of poisoning. As we cannot make out the cause, I will state the cause to you and see if you can help us to solve the mystery. I will also send you a sample of the extract of vanilla, which was used to flavor the cream—I send you what was left. It was purchased at the store here, and bears the label of N. L. Haworth, New York, and is known as the "Buckeye Extract." The evidence goes to show that it was the cream that did the mischief, as nearly every one that ate of it was sick, in fact, every one, so far as I can learn, except two, were sick. There was one boy sick who claims he did not eat any of the cream, but drank lemonade. His statement, however, must be taken with some allowance.

The milk was gathered up at different places during the forenoon, boiled, and sugar and corn-starch added; it was then taken to the grove and frozen in small freezers and emptied into a tin lard-can, which was bright and clean inside. The milk is said to have been fresh and sweet, though some of it was carried over a mile in the sun.

The symptoms of the cases which I examined were about as follows: Nausea and vomiting, severe cramping in the stomach and bowels, diarrhoea in a few cases only, great thirst, frontal headache, pulse small and quick, temperature slightly elevated, pupils dilated; blood was vomited in a few cases, with great straining; patients were very much prostrated. These symptoms lasted from six to twenty-four hours, when they would gradually subside, leaving the patient weak and nervous, and very sore about the stomach.

Please have the extract of vanilla analyzed, if you think best, and let us know the cause of the sickness, if you can, so that we may avoid it in the future.

Very respectfully yours,

C. M. DEEM, M. D.

OHIO STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY,

COLUMBUS, OHIO, July 10, 1888.

DR. C. M. DEEM, *Range, Ohio*:

DEAR SIR: Your letter and sample of vanilla at hand. From what you tell me, I judge the trouble was in the milk and not in the vanilla.

In two instances where ice cream poisoning has been investigated tyrotoxinon has been found. In another case, where milk had poisoned a number, it was found that the cows were milked at noon and the milk immediately placed in closed cans and carried in the hot sun to the depot to be shipped to the place of sale; tyrotoxinon was also found here.

It would be well to inquire very minutely into this point. How old was the milk you say was "carried over a mile in the sun?" What was the condition of the can in which it was carried? Can anything be learned of the health of the cows that furnished the milk? But, above all, was any of the ice cream saved? If we had samples of *that* we could doubtless solve the question—I presume it was thrown away—if not, send us all that can be had. Please send us, if possible, a minute history of each sample of milk, from the time it was milked until frozen.

We can make a physiological test of the vanilla, though it has been shown that if it were as poisonous as aconitia, it is not present in sufficient quantity in ice cream to produce poisoning.

Yours truly,

C. O. PROBST, *Secretary.*

RANGE, OHIO, *July 10, 1888.*

C. O. PROBST, M. D.:

DEAR SIR: Yours of the 10th was received in due time. I have delayed answering till I could get all the particulars I could. I will now say: The ice cream was all eaten before the nature of it was suspected, so I have none to send you. Since receiving your letter, and investigating further, I am of the opinion that tyrotoxicon in the sample of milk brought from the country was the cause of the trouble. All the milk gathered here in town was morning's milk, and was not exposed to the sun long till cool; none of it was carried over one-eighth of a mile. The milk I spoke of, which was carried from the country, was carried by two boys about twelve or fourteen years old, in tin buckets with lids on. The buckets were in daily use about the house, and were supposed to be clean. The boys left town about six o'clock, and returned with the milk about nine. They arrived at the farm-house about seven, just as the lady had finished milking; she strained the milk into their buckets, and they started home with it while yet warm from the cow. They were nearly two hours on the way home, stopping several times to rest in the shade of a tree. This milk was taken to the ground and mixed with the other, a part of which had been boiled and corn-starch added, then frozen in two small freezers, which would hold but a small portion of the milk. They were filled, frozen and emptied three or four times, and it was nearly one o'clock before all was frozen. The milk, before being frozen was kept, part of it in a stone-jar and part of it in a tin-can, sitting under a tree, but was in the sun at least part of the time. They began eating about one o'clock, and the first case—a little girl—took sick about three; no others sick till after four, and some as late as eight o'clock. All cows were healthy, so far as known, and are on good pasture.

I would be pleased to hear from you again and have your opinion of this matter. I would also like to experiment a little with milk. If you give me a simple method of testing for tyrotoxicon, I would be much obliged, and will make experiments and try to learn all the conditions under which this poison may be produced; that is, if a simple method is known which I could work here in the country without costly apparatus.

Thanking you for your interest in this case, and for the help you have already given us,

I remain, most truly yours,

C. M. DEEM, M. D.

EIGHT CASES OF SUPPOSED TYROTOXICON POISONING, WITH FOUR DEATHS.

PORT JEFFERSON, OHIO, *April 25, 1888.*

C. O. PROBST, M. D.: In answer to your request for "fuller details of my cases of tyrotoxicon poisoning, and especially the food supply of the family poisoned," I submit the following: I was first called to see the family of Frank H., living two and one-half miles north of this place, on Saturday evening, April 7, 1888. The family had been

under the care of another physician from the Wednesday previous. Upon my arrival I found five of the family sick, and one boy of about six and one-half years old dead. The sick ones were as follows: Mrs. H., aged about 40 years; Etta, aged 16 years; Louie, aged 14 years; Letta, aged 10 years, and Grover C., aged 18 months. The mother had been confined upon the day previous (Friday), and was said by the attendants to have been delirious at the time. Their condition at the time of my visit was about as follows:

Mrs. H. was wildly delirious, scarcely able to be restrained in bed; face flushed; pulse 120; respiration 28; had been vomiting for twenty hours; constipated; had dark colored rash over face, breast and fore arms; eyes wide open and staring; pupils dilated; no lochial discharge. From the extreme restlessness of the patient, I was unable to make a more thorough examination.

Etta, comatose; pulse 88, intermittent, pupils dilated, conjunctiva injected; face flushed; respiration 12 and irregular; constipated, had vomited for thirty-six hours; temperature 100°; could not examine tongue; had rash upon face and arms.

Louie, rational; pulse 100, regular; respiration 20; pupils slightly dilated; constipated; tongue coated white; vomiting for fifteen hours; temperature 103°; complains of pain in head and stomach; no rash.

Letta, rational; respiration 22, pulse 100, regular; temperature 102 3-5°; tongue clean; vomiting for twenty-four hours; bowels moved during the day; complains of headache; no rash.

Grover C., comatose; pulse 100; respiration 40; vomiting for twenty hours; bowels not moved; rash over arms and body.

Sunday evening, the 8th, I found Walter, aged 9 years, sick; complains of head aching and pain in stomach; vomiting; pulse 106; respiration 30, temperature 103 4-5°; tongue coated white; bowels moved during the day; no rash.

On Monday morning, the 9th, Viola, aged 5 years, was taken with like symptoms. Delirious; pulse 108, temperature 106°; pupils widely dilated; conjunctiva injected; tongue coated; vomiting all night; had rash same as the others.

Of the above, Grover died Monday morning, the 9th, Viola on Friday, the 13th, and Mrs. H. on Sunday, the 15th of April. Of the others, at this writing, Louie and Walter are convalescent; Etta and Letta are on the road to recovery.

The general character of the symptoms in all were very much alike—restlessness, vomiting, usually of bile or the liquids drank; frontal headache, countenance flushed, eyes injected, and pupils dilated; tongue coated white, becoming brown in center; some pain in stomach, intense thirst; iced drinks called for almost incessantly; no appetite, no tympanitis; abdomen about natural size, and not retracted; no kidney trouble, no super-sensitiveness of skin.

We have been having an epidemic of cerebro-spinal meningitis in our community, and two of these cases partook somewhat of the epidemic influence, in at least one symptom in each. Etta became deaf—she was slightly so before her sickness—and Letta's head was retracted.

Now, as to the probable cause of this disease. The family are miserably poor, and the house in which they live, consisting of three rooms, is probably fifty years old, and very dilapidated—has no cellar underneath. The sills of the kitchen part are rotten and lie upon the ground; the floor of the kitchen has wide cracks in it, and, was said by reliable persons to have been littered with the excrement of chickens, ducks, and even of the children, who would use it on a cold day as a privy. If the floor was ever scrubbed—and it did not look like it ever had been—the water, saturated with the filth, would drop through the floor, where it could not be reached. The kitchen is about 12 feet square, and, at my first visit, in one corner stood a barrel half full of tainted scraps of meat, bought at a slaughter-house, and slightly salted, but not before it was spoiled. Close to it stood a table upon which the milk from their one cow was placed, without any covering. Their drinking water was brought from a large ditch which ran about 100

yards from the house, and is as good, if not better water than that of Columbus or Cincinnati. There was a report that the water was contaminated by dead animals above the point where the family obtained their supply. Upon investigation, that report was found to be untrue. The cow was kept in the barnyard—was fairly well-fed, and had access to the same ditch for water. Before I visited the family the suspicion was aroused that the milk was the cause of the malady, and it had all been thrown away except a small cupfull, which had an indescribable sickening odor, and turned acid litmus paper a dark lead color. The meat had the same odor, and I cannot imagine how any one except a Digger Indian could have eaten it. Yet some of it had been eaten for supper that evening. I ordered the whole barrel to be emptied upon the manure heap, and for them to procure water and milk from other sources. The trustees of the township took charge of the family, and they were liberally supplied with everything needed for their comfort. The father of the family escaped the disease, but the fact that he was a day laborer, and not at home for his meals but a small portion of the time, and even when not at work did not spend his time at home, may probably account for his exemption. I am somewhat in doubt as to the cause of death in Mrs. H.'s case—whether from the poison or the exposure after her confinement. During the last two days of her life there were some indications of puerperal fever, some tenderness of the uterine region, and some tympanitis.

Yours respectfully,

J. F. MILLER, M. D.

TRICHINOSIS.

REPORT OF CASES BY DR. J. T. MILLS.

JERSEY, OHIO, *September 28, 1888.*

C. O. PROBST, M. D., *Secretary State Board of Health, Columbus, Ohio:*

DEAR DOCTOR: Yours of the 25th inst., asking a report of cases of trichinosis coming under my observation within the last year, is at hand. I remember promising you a report earlier, but, contemplating its incompleteness, I deferred the matter, feeling it would not or could not be as full or complete as your honorable body might desire, from the fact that the patients had been in the hands of another physician for two weeks previous to my being called; and not being favored with a professional history of the infection, could only give facts as drawn from members of the afflicted families subsequently. These, together with a tabulated sketch from my notes upon the treatment of the patient most seriously affected, I cheerfully submit.

Mr. Washington M., an aged farmer, who resides near Johnstown, Licking county, Ohio, butchered a hog in the early part of November, 1887, to supply meat for his family, and also the family of his son George, who lived in Jersey township, about three miles from his father's home. The hog was nearly two years old, and in the early part of the winter of 1886 and 1887, with some thirty other hogs, had the so-called "hog cholera," and was the only one of the entire herd that survived. After convalescence the hog thrived, grew rapidly, fattened nicely, and when killed had all the appearance of good healthy pork. The meat was accordingly divided between the two families without the least suspicion of its being diseased.

In the senior M.'s family there were seven persons—himself, aged 68, wife (second wife), son, aged 25, step-son, aged 19, two small children (boy and girl), aged respectively 5 and 7 years, and a servant girl aged 17.

The junior M. family numbered six—the father, aged 35, the mother, aged 35,

and four boys, whose ages ranged from 5 to 11 years. All partook of the meat except the oldest boy, who is not fond of pork, and consequently did not eat of the diseased meat, and was the only member of this family that did not suffer from trichinosis.

About two weeks after they began to use this pork for food, simultaneously, three members of the elder house, Mr. W. M., his wife, and son, aged 25, together with five of the junior house, Mr. Geo. M., his wife and three sons, began complaining with general malaise languor, painful condition of the eye-lids,—manifested particularly upon action of the orbital muscles,—congestion of the conjunctiva, intolerance of light, oedema not only of the eye-lids, but throughout the entire face. Cephalalgia, hoarseness, irritable fauces, bronchitis, cough, difficult deglutition, eructations, flatulency, nausea, vomiting, colic and neuralgic pains of the abdomen, followed by diarrhoea, cardialgia, bad taste and fetid breath, a sense of uneasiness and exhaustion, with fullness of the forehead and tinnitus aurium. There was lameness and tenderness of all the muscles of the body, more especially of the trapezius masseter, and muscles of the lower extremities. Formication was very annoying. The joints were stiff, tender and swollen. Motion was extremely painful. Upon exertion, palpitation of the heart and difficult breathing would become aggravated. Oedema of the lower extremities developed about the close of the second week after invasion. During the first week there was insomnia. Afterwards the patients could sleep profoundly, when not disturbed by paroxysms of pain or cramping of muscles. In all these cases there was more or less fever, general prostration, bronchial catarrh, aphonia dyspnoea, violent muscular contraction, and profuse perspiration, having a peculiarly offensive odor, of diagnostic value.

These patients, eight in number, were treated by the same physician, first for rheumatism, then for "typho-malarial fever," and later he gave an opinion, or suspicion, that the families had been eating something that poisoned them, but could not tell what it was.

The young man (age 25), died in the third week of his illness. There was no post-mortem examination, although suspicion began to rest upon the meat. Washington M., his wife, George M. and his three sons began to show convalescence, but Mrs. George M., it was thought, could not survive.

At this juncture I was called, and taking charge of the cases, am able to give the following notes upon the case of Mrs. George M.:

As early as possible I received a portion of the suspected meat and submitted a piece to Prof. Bleile, of Starling Medical College; also a piece to Dr. Probst, who sent it to Prof. Detmers, of the Ohio State University; both of these gentlemen found trichinae in large numbers; although the most favorable portions of the hog, for the location of trichinae, could not be had, having been consumed. The portion examined was a small muscle taken from the "side-meat" as near to the psoas muscle as I could obtain.

Mrs. M. (age 34), temperament, nervo-bilious, manifested malaise and exhaustion in ten days after eating trichinous meat that was killed on or about the seventh of November, 1887; took her bed on the twelfth of December following, and developed gradually and progressively all the symptoms of trichinosis. Was called December 22, 1887; found patient semi-comatose, pupils dilated, would not respond to light; respiration irregular, with dyspnoea; paroxysms of pain, with cramping of muscles, and palpitation of the heart occurring every two or three hours, aggravated by exertion, or invited by pressure or by moving the extremities, hemiplegia, anaesthesia, with loss of motion of the left side, and hyperaesthesia, with impaired motion of the right; also hemiphonia. The joints and muscles were painful to touch, the latter rigid and contracted, particularly the abdominal muscles; great tenderness in the epigastric region; irritable fauces and bronchi; slight trismus, tinnitus; tongue, edges red, with an ashy colored fur in the center; pulse 120, regular volume small, weak; heart sounds clear, but weak; temperature, per axilla, 102°; urine scanty, color, reddish-brown; specific gravity, 1030. No albumen; some blood; bowels sluggish, though informed they were easily influenced by cathartics.

23d. Patient easier; symptoms better, is not so drowsy, will respond intelligently to questions; voice stronger; pulse 112, volume weak; temperature $101\frac{1}{2}$; paroxysms of dyspnea not so frequent or distressing; bowels responded to the cathartic with three evacuations; tenderness upon pressure.

24th. Patient improving; the right pupil has dilated, left, no diminution; pulse 105, volume better; temperature $100\frac{3}{4}$; three paroxysms of dyspnea through the night; tongue dry, coat changing to brown in color; sordes upon the teeth; tympanites more marked.

25th. Left pupil normal, right still dilated; pulse 98, weak; temperature 100; talks with more ease; difficulty with breathing about the same; bowels acted satisfactorily to the laxative; less tympanites present; tongue more moist and cleaning; sordes, same; fauces more irritated; slight increase of cough; expectoration copious, rusty color; paroxysms of pain lighter and less frequent; muscles more relaxed.

26th. Both pupils normal; respiration 23, and more regular; pulse 90, volume stronger; temperature 99; tongue cleaning showing red center; fauces same; cough, and expectoration same; tympanites slightly increased; turning the patient is not attended with as much pain, though formication is more annoying; oedema of eye lids and face increasing; secretion of urine more copious and clear; sp. gr. 1025 ; reaction acid.

27th. Marked improvement; pulse 86; volume good; temperature 99; tongue not so red in appearance; cough better; patient can help herself with less suffering.

28th. No change of any importance.

29th. Improving; pulse 80; temperature, $98\frac{3}{4}$; respiration normal. Permit the patient to be lifted to an easy chair to have bed changed.

30th. Patient not so well; complains of increased pain and tenderness of the left foot and ankle; also very painful contractions of the tendo-achillis of the same; pulse 86; temperature 99; tongue dry and red; bowels moved twice through the night, though somewhat tympanitic and tender.

31st. Pulse 100; temperature 100; tongue red and tremulous; bowels more tender and tympanitic; eructations, with occasional hiccough; pain greatly increased in the left leg, involving the entire extremity and extending to the iliac and lumbar region; patient very restless; some delirium.

January 1st, 1888. Pulse 108; temperature, 101; other conditions very much as yesterday, save the leg, which is much more swollen, and the tongue more red and tremulous, apparently denuded of epithelium.

2d. Pulse 108; temperature, $101\frac{1}{2}$; tongue red, tremulous, pointed; pain intense; features pinched; vertigo, with a feeling of syncope, when head is raised from the pillow; respiration labored, twenty per minute; leg very much swollen, presenting a condition found in phlegmasia-dolens, save in color; a peculiar exanthemata present on the lower portion of each leg, confined to the region of the gastrocnemii; papulated very much like eczema, each papule bearing a brown crest, in appearance resembling scabies. Bowels moved three times during the night and day. Found upon manipulating the leg that dizziness and palpitation would ensue.

3d. Patient easier; rested well through the night, though suffers intensely when the leg is touched or moved; pulse 100; volume weak; temperature 100; think the weakness of heart action due to the antipyrin.

5th. Pulse 100; temperature 99; leg more painful when moved; patient perspiring profusely when asleep; bowels have not moved; tender, tympanitic.

6th. Pulse 100; volume weak; temperature 99; patient is manifestly growing weaker; impress upon the minds of the attendants the necessity of good nursing and supportive measures; patient complains of lancinating pains in the left foot, left thoracic region and shoulder; auscultation and percussion show no signs of congestion either of the lungs or pleura; patient still perspires profusely.

7th. Pulse very irregular, running from 70-80; temperature 101; vertigo and darkened vision can be produced by raising the head or manipulating either extremity; pain in the leg very much relieved and swelling subsiding; the ophthalmic condition aggravated; slight nausea present.

8th. Patient growing weaker, yawns frequently; pulse irregular, running at about 68, volume very weak; temperature 100; perspiration copious; other conditions very much as yesterday.

9th. Pulse 72, more regular, with more volume; temperature 100; respiration easier, does not yawn so much; the features more careworn and eyes staring; could not detect any valvular or pericardial trouble; manipulating extremities still produces vertigo, blindness, and palpitations.

11th. Pulse 80, irregular, volume weakened; temperature 99; 8 A. M., passed into a chill, which lasted two hours, followed by hot stage, and sweating stage.

12th. Pulse 80, more regular, volume better; temperature 100; respiration normal; bowels moved spontaneously; patient stronger, with less pain upon being moved, calls for more nourishment.

15th. Pulse 70, volume good; temperature 99; respiration normal: patient improving.

18th. Patient improving; takes more nourishment; can be moved with less suffering, although the joints are stiff, and tender, and muscles sore, very much like one recovering from a severe attack of rheumatism. It might suffice, perhaps, to say now, that the patient was seen at intervals of two, three, four and five days, as was found necessary, until the fifteenth of January, 1888, when I permitted her to use crutches to get about the room; these she continued to use for two months. Convalescence was slow, and at this date, September 28th, while the patient, to all appearance, seems to have made a recovery, there is a rheumatoid element, slight gastritis, ophthalmia, a naso-pharyngeal and bronchial catarrh, that remain as relics of trichinosis.

The servant girl of Washington M.'s family began to develop symptoms of trichinosis in the sixth week after eating the pork. This case, with well-marked symptoms, ran a mild course, and made a good recovery, with nothing specially interesting to note.

You will remember there were twelve persons who ate of this meat; of that number three only escaped the poisonous effect, they being the younger of the senior M. family, with good digestion, vigorous, and healthy. The young man that died had poor digestion—was a dyspeptic. He was fond of meat, and preferred it rare. He kept house for his brother three days while the family was absent on a visit. During this time he cooked for himself; would cut slices of meat from the ham and broil it over hot embers, and it is to be presumed that much of the meat prepared to his taste was poorly cooked.

Referring to your letter again, I find you also solicit any suggestion or theory that I may have formed from my association with these cases, that might stimulate investigation as to the cause and preventatives of this dreadful disease. The cause of trichinosis long since established by scientific investigation, is known to be the result of the hog feeding upon decomposed animal matter, or eating the carcasses of dead rats, cats or rabbits containing trichinae. The trichinae communicated in this way to the hog are transmitted to the human by using the meat of such hogs for food. The development of the parasites, their migration and consequent poisonous effect need not be discussed. But if your Honorable Body will permit, it may not be out of order to say just here, that there has been a lurking suspicion in my mind for years that the disease called "hog cholera" was a misnomer; that it was nothing more nor less than trichinae affecting the hog. This suspicion has been strengthened by the history of the diseased herd before mentioned, and by reports from other localities of cases of trichinosis that was caused by diseased meat from hogs that has survived hog cholera. I am aware that this theory

will meet the derision of able scientists who have explored this field and written upon the etiology and pathology of diseases peculiar to our domestic animals. So thoroughly convinced am I that there is a connecting link to the chain to be found here, or that the disease emanates largely from hogs that suffered from cholera, that I believe it should be made obligatory upon the part of the owner of a herd of swine known to have this disease, to cause the the entire herd, together with all other hogs that may have associated with them to be put to death and cremated, and the field or pen where they have been kept thoroughly renovated.

In regard to prophylactics, there is nothing but the complete destruction of the embryo in his capsulated home, that will prevent trichinosis. If meat has been eaten which is suspected, or is known to contain trichinæ, by rapidly sweeping the parasites from the bowels by drastic cathartics before they have had time to propagate, the disease may possibly be interrupted. But we know of no way to destroy them and preserve the meat for food, except by heat. A temperature of 212 degrees will kill them. Hence, all pork should be thoroughly cooked before being taken for food.

In the manner of raising and fattening the hog for market or the meat tub, there is the most unpardonable carelessness manifested by the growers. Of all the animals grown for meat the hog receives the least attention. As a rule they are permitted to run anywhere and everywhere, and being scavengers, will eat anything and everything, from the most offensive putrid matter to the last carcass of rat, cat, rabbit, chicken or hog, no matter by what disease they may have come to their death. How often do we hear this: "Throw it to the hogs, they will get away with it." This is not as it should be. The range for the hogs should be carefully policed, and all carcasses of dead animals gathered and burned—burying will not suffice—they may be uprooted. The health of the herd should be constantly looked after. They should be kept thriving from their birth to the time of butchering.

Again, all hogs for meat should be slaughtered before they are one year old, as trichinæ is generally found in the old hog; and those attaining the age of eighteen months or two years, should be fattened only for the lard they may produce. Believing that if the above mentioned rules could be strictly observed, the danger from trichinosis would be materially lessened, I remain, yours,

Very respectfully,

J. T. MILLS, M. D.

BOSTON, MASS., *January 28, 1888.*

DR. C. O. PROBST, *Secretary, Columbus, Ohio:*

DEAR SIR: I have just received the first copy of your *Sanitary Record*, and am much pleased with it, especially in the fact that it stands on its own basis, independent of private enterprise, the latter being sooner or later involved in trouble from their misuse for advertising purposes.

Our experience differs considerably from yours in regard to trichinosis. We have examined about 13,000 hogs for trichinæ within the past ten years, a considerable number of which had been under observation from birth, and there had been no evidence of hog cholera among them.

The number of cases of trichinosis reported in this State, in man, have been comparatively few. I have seen six cases of varying severity, and the most prominent symptom has been muscular pain and soreness, to such an extent as to interfere with all voluntary motion, and in some degree with involuntary. Even winking of the eyelids was painful, and the movement of the intercostal muscles necessary for respiration was intensely painful.

Yours truly,

SAMUEL W. ABBOTT, M. D.,
Secretary State Board of Health.

ALTON, OHIO, *January 5, 1888.*DR. C. O. PROBST, *Columbus, Ohio:*

DEAR DOCTOR: Yours of 19th just received; thanks for contents. In regard to the case referred to, can give but a brief report, as no notes were kept. I suspected nothing new in the beginning of the sickness, and, perhaps, would not at all if my attention had not been called to the fact that she had eaten of the suspected meat, and cannot say that she was affected thereby. The symptoms, when first seen, were about as follows: Pulse 100, temperature $103\frac{1}{2}$, vomiting, diarrhoea, pains in limbs and back, or, as she expressed it, "all over," extreme tenderness all over stomach and bowels, latter slightly distended. Do not know that there was any swelling of the face, as in the Cox family. I do not remember that she complained particularly of soreness of limbs, but she is a silent woman, and says nothing unless questioned, and I may not have asked her. The fever lasted four or five days, then gradually declined, as did the tenderness of bowels. The diarrhoea was very free, watery discharges, and still continues to some extent, but gradually improving. A peculiarity in the case is prickling or benumbing sensation, beginning at the tips of the fingers and extending towards the shoulders, very annoying; this is recent.

I am, very truly, etc.,

DR. T. B. NORRIS.

RAVENNA, OHIO, *February 24, 1888.*

DR. PROBST:

DEAR DOCTOR: Your request for more meat was received, via Dr. Miller, to-day, and I hasten to send a piece by to-day's mail, as requested. There were five members of the family partook of the ham, raw, and all suffered from vomiting, purging, slight fever, rapid pulse, muscular pains, puffing eyelids, and hoarseness, probably not all in an equal degree. Their physician, Dr. Hiddleston, only saw them once or twice, and as far as known, all did well. If your microscopist succeeds in finding the trichinae, I would be much pleased with a slide containing a good specimen.

Yours truly,

B. B. LOUGHEAD, M. D.

THE HISTORY OF EIGHT CASES OF TRICHINOSIS.

C. O. PROBST, *Secretary State Board of Health:*

DEAR DOCTOR: In reply to your recent letter of inquiry, I will now give a brief report of the eight cases of trichinosis which have occurred in this county.

The cases occurred in the family of Charles T., who resides ten miles west of this place.

Dr. Grosvenor, of Hardin, Ohio, has had the cases in his charge, and to him I am indebted for such details as I may be able to give.

February 17, in company with Dr. D. R. Silver, of Sidney, and Dr. Grosvenor, of Hardin, I visited the family, and after obtaining a history of the several cases, and noting the symptoms, we felt warranted in subscribing to the opinion already entertained by the physician in charge.

All afflicted acknowledged to have eaten a certain ham which they had partaken of either raw or but slightly cooked.

An interesting feature here is that this particular ham was obtained from a neighbor's in return for meat previously borrowed. Another part of the same animal had also been used by still another family; yet neither one of these families (who cooked their meat *well done*), was attacked, although samples of meat from this hog, taken from the ham of which the Taylor family had partaken, as well as that procured at the neighbors, when examined with the microscope by Dr. Silver, revealed trichinae. And, to make the affair still more interesting, the father, Charles T., being a sufferer from

some chronic disease, did not eat any of the pork, and therefore was exempt from the disease; while Florence, who was just convalescing from typhoid-fever, and to suit whose appetite the meat was cooked rare, was first and most severely attacked by the disease.

I am informed that the ham, after first being cut, was kept expressly for her use until after she had used it, cooked rare, for a week or two, after which all ate of it, at her solicitation, cooked in the same manner. This was not their usual way of cooking pork.

The younger members of the family, as quite frequently happens with children in the country, ate small pieces of it *raw*, as it was being cut for the meal. You will readily see from the history of the individual cases that the ones who ate of it raw were most severely attacked. Florence, if I am not incorrectly informed, ate of it both raw and cooked rare.

I have had no detailed account of the cases for about one week, but with such information as I possess, I will give the prominent features of each individual case, beginning with the first one attacked.

Case 1st. Florence, age 19. Pronounced convalescent from typhoid-fever January 1. First symptoms January 25. Vomiting and diarrhœa very severe. Temperature 104, varying but always high, pulse rapid, extreme prostration, soreness and stiffness of muscles, œdema, with general anasarca; insomnia. As case progressed the patient became helpless. There was pyrosis with sore mouth, considerable tympanites, with recurrent diarrhœa. At the end of six weeks there had been no apparent interference of respiration by reason of the effects of the disease directly upon the lungs or diaphragm, but the patient had become powerless to move limbs or body. The surface of the body now became black with extravasated blood. From this time on respiration was embarrassed. The lower limbs became fixed in perfect extension, and Thursday, March 15, the patient died, it having been about seven weeks from beginning of the attack.

Case 2nd. Mrs. T., age 50. Attacked February 1, with severe and persistent diarrhœa lasting two weeks, after which it was intermittent. Temperature 102, pulse 115. There was soreness and stiffness of muscles, appetite good, convalescing. Ate ham cooked rare.

Case 3rd. Charles, age 27. Attacked about February 1. Temperature 101, pulse 100. Soreness in muscles, no diarrhœa, appetite *good*, convalescing. Ate of the same meat partially cooked.

Case 4th. Ella, age 17. Attacked February 1. Had intermittent diarrhœa, some anasarca, temperature slightly elevated, appetite ravenous. Patient is convalescing. Ate of the meat cooked as above stated.

Case 5th. Walter, age 12. Was attacked about February 1 with watery diarrhœa. Temperature 102 to 103. Oedema of face, soreness of muscles and weakness of knees. Had symptoms of irritation of diaphragm. Now better. At the end of six weeks pulse still over 100. He has passed several large, round or lumbricoidal worms. Appetite ravenously good. Seems to be convalescing. Ate small pieces of the ham raw, also ate at the table with the rest of the family.

Case 6th. Mabel, age 10. First symptoms February 1. Pain in bowels, temperature 103, pulse 120, constipation, appetite good. Ate small bits of the ham raw, also ate it cooked, same as the others.

Case 7th. Ira, 8 years old. Symptoms and history of his case very similar to that of Walter. Is now convalescing. Ate pork raw and cooked rare.

Case 8th. Eliza, aged 6. Attacked about February 1. Oedema and general anasarca. Temperature 103½, pulse 120, constipation. Has been helpless almost from the first, is quite restless and growing worse, will probably die. Ate of the ham raw several times.

In these cases the appetite, as a rule, has been exceedingly good, even ravenous. There was no hoarseness or marked dyspnœa, as a rule. Neither was there serious difficulty in swallowing.

The history of these cases teaches us very plainly the importance of eating no pork except that which is *well* cooked. It also shows that there is no danger in eating even trichinised pork if it has been well cooked.

Another point seems to be established by these cases. The severity of the disease is in direct proportion to the amount of trichinised pork eaten.

The habit of eating even small bits of raw pork is attended by great danger, for in case the meat should prove to contain trichinae the result might be disastrous.

Yours truly,

SIDNEY, OHIO, *March* 17, 1888.

C. E. JOHNSON, M. D.

ABSTRACTS FROM SPECIAL CORRESPONDENCE.

The correspondence of the office is constantly increasing, and during the past year¹ a large number of communications relating to various subjects have been received. The entire number of letters received and filed was 1,360, excluding postal cards, of which there were a large number. The letters sent from the office, of which copies were made, cover 1,368 pages of letter-book.

We present here a small part of this correspondence, which will serve to show the character of the information requested of the board. In addition, other letters have been selected treating of subjects pertaining to the work of the board, which could not be presented in any other form :

QUERIES, RERORTS, ETC., FROM LOCAL BOARDS OF HEALTH AND HEALTH OFFICERS.

RESOLUTION ADOPTED BY THE BOARD OF HEALTH OF THE VILLAGE OF LOUISVILLE.

WHEREAS, By law it is made the duty of boards of health to take cognizance of and, as far as in their power lies, to remedy the unsanitary condition of all the territory under their supervision; and

WHEREAS, The incorporated village of Louisville has, within a few years past, suffered from epidemics of contagious diseases, whereby several citizens lost their lives, said diseases having been, if not brought on, at least aggravated by the unsanitary condition of the surroundings; and

WHEREAS, There are three grave-yards within the limits of said village, situated in various parts thereof, the said grave-yards being made the repositories of the dead, not only of said village, but also of the surrounding country; and

WHEREAS, In the opinion of this board, said grave-yards are highly detrimental and dangerous to the public health of said village; and

WHEREAS, The laws of Ohio restrict the authorities of said village in the premises; therefore,

Resolved, That the General Assembly of the State of Ohio is hereby requested to pass a statute conferring on the authorities of said village, in regard to said grave-yards, the same powers as are by statute conferred on the cities of said State; and

Resolved, That a copy of these resolutions be sent to the State Senator from this district, the Representative of this county, and the secretary of the State Board of Health.

D. M. SLUSS, *President*,

F. E. FAVRET, *Secretary*.

The above resolution was received by the State Board of Health and referred to its Legislative Committee.

It was learned that a bill would be introduced in the Senate covering this resolution, and an act was passed April 16, 1888, repealing section 2551 of the Revised Statutes, which permitted the interment of the dead in any cemetery in use at the time of the incorporation of any village.

WHOOPIING-COUGH IN THE PUBLIC SCHOOLS.

DENNISON, OHIO, *September 13, 1888.*

C. O. PROBST, M. D., *Secretary Ohio State Board of Health:*

DEAR DOCTOR: Will you advise me as to whether cases of whooping-cough should be excluded from public schools, and how long? and whether children not afflicted, but with cases in their family, should be excluded?

Is it proper to dig a pit in the alley alongside a vault, but deeper, and drain the vault into it, and cover up with clay?

Please answer to settle controversy. What do you generally do with pig-pens?

Yours,

S. L. McCURDY, M. D., H. O.

OHIO STATE BOARD OF HEALTH,
 SECRETARY'S OFFICE,
 COLUMBUS, O., September 17, 1888.

DR. S. L. McCURDY, *Health Officer, Dennison, O.:*

DEAR DOCTOR: Your letter of the 13th received. In answer, will say first, yes; cases of whooping-cough should be excluded from the public schools. Second, they should be kept out until at least thirty days after complete disappearance of the characteristic fits of coughing. Third, children not afflicted, but living in the same house with cases of the disease—unless the latter are isolated—should also be kept from school. Fourth, digging pits in alleys to receive drainage from privy-vaults should not be permitted. All vaults should be water-tight, and should be emptied as required.

Yours truly,

C. O. PROBST, *Secretary.*

TESTS FOR THE PURITY OF MILK.

MARYSVILLE, O., June 18, 1888.

C. O. PROBST, M. D., *Secretary State Board of Health:*

DEAR SIR: I have been instructed by the board of health of Marysville, Ohio, to inquire of you if you knew what was the most improved and reliable instruments for testing the purity of milk, and if you could inform us where they could be procured, and the probable cost of the instruments. An early reply will much oblige,

Yours,

E. L. PRICE, *Secretary of Board of Health.*

OHIO STATE BOARD OF HEALTH,
 OFFICE OF THE SECRETARY,
 COLUMBUS, O., June 27, 1888.

MR. E. L. PRICE, *Secretary Board of Health, Marysville, O.:*

DEAR SIR: Your favor of June 18th, in regard to milk tests, duly received.

The most satisfactory test for milk is the chemical analysis, *i e.*, determining the "total solids," "fat," and "ash" after incineration. A comparatively fair test, however, may be made by taking the specific gravity and measuring the amount of cream. For the specific gravity you will require a *lactometer*.

If milk is normal in taste and appearance and the lactometer shows a normal specific gravity, we are tolerably sure the sample is pure. If the specific gravity is too high, skimming is indicated; if too low, the milk is probably watered.

A "cream gauge" gives a rough measure of the fat. The gauge is a graduated tube in which the cream is allowed to rise. To be a fair test, the milk should be placed in it fresh from the cow and cooled.

An experienced man with the lactometer and cream gauge can make a fairly accurate test of milk. These instruments can be purchased of any large dealer in chemical instruments.

Trusting this will answer your inquiries, I am

Yours truly,

C. O. PROBST, *Secretary.*

KEEPING PHOSPHATES IN THE CORPORATION.

LOUISVILLE, O., April 7, 1888.

DR. C. O. PROBST, *Secretary Ohio State Board of Health:*

DEAR SIR: The board of health of Louisville desire to ascertain from you what regulations may be passed by the authorities of villages to restrict the traffic in phos-

phate or other offensive fertilizers. We have two dealers in phosphate in this town, who keep their goods in warehouses which are quite close to several private residences. The owners of the latter justly complain that when the phosphate is unloaded from the cars to be stored in the warehouses, or whenever it is loaded upon the wagons of farmers who purchase it, the odor emitted from the article is so offensive as to sicken delicate and susceptible persons.

Now I would ask you the following questions :

1. Can the keeping of phosphate for sale in villages be entirely prohibited?
2. Can dealers in phosphates be required to keep the article, *i. e.* (to receive, keep and sell the same) at a sufficient distance from all residences as to render it inoffensive?
3. Can you refer me to any city or village, the authorities of which have passed any regulations with regard to phosphate, which, when contested, have been sustained by the courts? If so, please to name the cases.

By answering the above questions, or giving any information or advice which will be of use to the Louisville board of health in dealing with this matter, you will greatly oblige,

Your humble servant,

F. E. FAVRET,
Clerk Louisville Board of Health.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, OHIO, *April 17, 1888.*

F. E. FAVRET, *Clerk Louisville Board of Health:*

DEAR SIR: Your letter of the 7th inst. duly received, and my delay in answering has been caused by being unable, until this time, to consult the attorney-general regarding your questions.

1. "Can the keeping of phosphate for sale in villages be entirely prohibited?" No; I do not think so. The board cannot prohibit, absolutely, a lawful business, which is not necessarily a nuisance, and which may be conducted without injury to the public health.

2. "Can dealers in phosphates be required to keep the article—*i. e.*, to receive, keep and sell the same—at a sufficient distance from all residences to render it inoffensive?" Your board can undoubtedly *regulate* the business in question and require it to be carried on in such a manner, or at such place, as will prevent a nuisance. I would advise your board to pass a rule governing the keeping and selling of phosphates, and then prosecute under the rule. If your council has, by a general ordinance, conferred powers on your board to make such rules and regulations as it may deem necessary, this rule will suffice; otherwise it should be made an ordinance of your village. The present attorney-general has given it as his opinion that rules and regulations of boards of health made under this general ordinance of council referred to are binding, a separate ordinance to meet each case not being required.

To your third question I would answer, I do not know of any city or village the authorities of which have passed a special rule in regard to phosphates.

Trusting this will be satisfactory, and wishing you success in your efforts to abate all nuisances in your village, I am,

Yours truly,

C. O. PROBST, *Secretary.*

SUSPECTED POISONING FROM CANDY.

SPRINGBORO, OHIO, *April 14, 1888.*

C. O. PROBST, M. D.:

MY DEAR DOCTOR: Several little children were taken very sick after eating heartily of candy colored *red*. All recovered. Symptoms would justify suspicion of poison

Is there a State analyst who makes examinations of suspicious articles of food free of charge? If so, I will send a sample of this candy.

Yours truly,

DR. RALPH S. MICHEL.

OHIO STATE BOARD OF HEALTH,

OFFICE OF THE SECRETARY, COLUMBUS, OHIO, *April 14, 1888.*

DR. RALPH S. MICHEL, *Springboro, Ohio:*

DEAR DOCTOR: Your letter of this date, in regard to sickness from eating candy and its analysis, just received. We would be under obligations to you for a sample of the candy and a full report of the cases. Can you exclude all other possible causes of the sickness?

Please send as large amount of the candy as you can, i. e., from one to two pounds, and, if possible, learn where it was manufactured; the last is important to us.

Hoping to hear further from you, I am,

Respectfully,

C. O. PROBST, *Secretary.*

SPRINGBORO, OHIO, *April 16, 1888.*

C. O. PROBST, M. D.

MY DEAR DOCTOR: I forward to-day by express, prepaid, a box containing sample of candy spoken of. Could not get the amount you asked for. The stick-candy—the package marked “Sample No. 1”—is the kind we suspected. Because I could not get more of that kind, I also send a package marked “Sample No. 2,” which is manufactured by the same man—Eckert, of Cincinnati—and evidently contains the same red dye. My reasons for suspecting the candy are as follows:

1. The older children of the family, who ate of the same lot of candy, but of sticks not colored, were not affected.

2. Of the three children affected, the two older ones, who did not eat so much, and that not so highly colored, were not very sick.

3. The youngest child, four or five years of age, was seriously sick. His juvenile eye had been caught by the gaudy color, and he ate only of the sticks that were wholly red.

4. Symptoms: high fever (very high in youngest child, and threatened convulsions), headache and vomiting.

5. No cause other than this could be ascertained. Made diligent inquiry. No canned goods had been eaten.

The family unhesitatingly blame the candy. I thought the case sufficiently suspicious to warrant an analysis. Should be pleased to hear the result of your investigation.

Most truly yours,

DR. RALPH S. MICHEL.

SPRINGBORO, OHIO, *April 22, 1888.*

C. O. PROBST, M. D.:

MY DEAR DOCTOR: I cannot say that any cases, other than the ones mentioned, could be attributed to the suspected candy. It is fair to suppose that it has been eaten by other children in the vicinity. That is the only point in its favor. I await the chemist's report with interest.

Yours truly,

DR. RALPH S. MICHEL.

OHIO STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, May 17, 1888.

DR. RALPH S. MICHEL, *Springboro, Ohio:*

DEAR DOCTOR: Our chemist informs me that he has made an examination of the candy you sent, finding it largely composed of *glucose*. The stick-candy—the sample suspected—is colored with cochineal. The other sample is not, and he had not determined its coloring matter when he reported. He supposes it to be an aniline dye, and will endeavor to learn its exact nature.

It appears from this, that the stick candy did not contain anything specifically dangerous to health.

Pardon the unavoidable delay in getting you this report.

Yours truly,

C. O. PROBST, *Secretary.*

INSPECTION OF MEAT.

SHELBY, OHIO, July 2, 1888.

C. O. PROBST, *Secretary Ohio State Board of Health, Columbus, Ohio:*

DEAR SIR: It has been reported to our board that one of our butchers, about two months ago, killed and sold the flesh of a steer that had a so-called cancerous growth on the throat. Also another butcher, several months ago, killed a cow that had given birth to a calf a few weeks before, and in the uterus was found a large quantity of pus. The animal bore marks of mal-nutrition before killing.

I wish to ask you what will be the best steps to take to prevent any further practice of that kind? An ordinance will be in force by the council after the next meeting, but I fear that will not prevent them from going out into the country and buying old and diseased cattle, and killing them before bringing them to town.

I proposed to the board of health to recommend the council to pass an ordinance requiring every animal killed for meat to be subjected to inspection by an officer for that purpose. The expense thereof to be defrayed by a stated sum assessed upon the animal inspected.

Also, I wish to ask you if you could furnish me with information by which I can detect impurities in water, milk, etc., and such foods as will likely fall under my observation. I am required to inspect all places from which complaint is made, and want some system to follow.

Respectfully yours,

M. T. LOVE, M. D., *Health Officer.*

OHIO STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, July 7, 1888.

DR. M. T. LOVE, *H. O., Shelby, Ohio:*

DEAR SIR: Your letter in regard to inspection of meat at hand. An inspector is certainly the best security for wholesome meat. I hardly think you can compel the seller to pay for the inspection.

If your board has passed a rule prohibiting the sale of such meat, you should have the first man who violates the rule arrested; and try and have a good, big fine assessed. A few such cases would, I think, stop such practice.

There is no satisfactory *simple* chemical test for impure water; it requires an expert chemist, up in water analysis, to make a satisfactory examination.

In regard to milk: By the use of a lactometer and cream-gauge you can tell tolerably well whether a sample of milk has been watered or skimmed. Before going to trial, however, you would require an analysis by an expert chemist.

Trusting you will succeed in securing pure and wholesome food,

I am, yours truly,

C. O. PROBST, *Secretary.*

VALIDITY OF RULES AND REGULATIONS OF BOARDS OF HEALTH.

EAST PALESTINE, OHIO, *September 5, 1888.*C. O. PROBST, M. D., *Columbus, Ohio:*

DEAR SIR: Enclosed you will find a copy of an ordinance creating a board of health in our village. Also a copy of the rules and regulations as passed by the board. The council has instructed me to refer the ordinance and rules to the State Board, with reference to advice on the same. Our solicitor claims that the board has established many rules that cannot be enforced, claiming that the ordinance does not grant such power. He claims that, under the ordinance, the board cannot regulate the construction of privy-vaults; neither can it regulate the matter of burial permits, registering and reporting births, deaths and diseases, etc., all of which the board has undertaken to do. Now, what we want to know is whether the rules can be enforced under the statutes and the ordinance. If you do not wish to give an opinion on this matter, please refer same to the attorney-general, or other authority. Let us hear from you at your earliest convenience.

Very respectfully,

S. H. GARRETT, *Mayor.*

OHIO STATE BOARD OF HEALTH,

OFFICE OF THE SECRETARY, COLUMBUS, OHIO, *September 5, 1888.*HON. S. H. GARRETT, *Mayor of East Palestine, Ohio:*

DEAR SIR: Your letter enclosing copy of ordinance creating a board of health in your village, and rules adopted by said board, is before me. * * * *

The attorney-general has already given his opinion that a board of health may make such rules and regulations as it may deem necessary to protect the public health, and that these have all the force of ordinances, when adopted by the board.

I would respectfully advise a change in section 4 of your ordinance, which should specifically grant to your board the powers to make such rules and regulations as it may deem necessary, according to section 2122, R. S.; this will remove all possible quibbling. Enclosed please find clipping as requested.

Yours truly,

C. O. PROBST, *Secretary.*

DISPOSAL OF NIGHT-SOIL.

WELLSTON, OHIO, *August 6, 1888.**To the State Board of Health:*

As health officer of the village of Wellstown, Jackson county, Ohio, it becomes my duty to give you my name and address, and such other information regarding the sanitary condition of our thriving young city as you may from time to time require. Our town has over 5,000 people, has grown rapidly, and consequently no precautions have been taken regarding its sanitary condition. There is not a privy-vault built according to law in the town, and very few, if any, have been cleaned. What shall be done with the excreta from the vaults? If emptied into our reservoir it would pollute the township. I have failed to find what disposition the law makes of it, and am at a loss to know what to do with it. Please notify me at once in regard to it. I will very cheerfully give the State Board any and all information regarding our town that is in my power.

Very Respectfully,

DR. C. B. HARRISON, *Wellston, Ohio.*

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY, COLUMBUS, OHIO, *August 7, 1888.*

DR. C. B. HARRISON, H. O., *Wellston, Ohio:*

DEAR SIR: Your report of organization of board of health and letter received. We have placed names of officers and members on our mailing list for all matter we send out.

In regard to privies: Where they are dangerously near wells, order them cleaned out and abandoned. Require all new ones to have vaults made according to the rule of the board.

Matter from vaults should be hauled some distance from town and buried, or placed on fields and plowed under.

I trust we will receive weekly and monthly reports regularly from you.

Yours truly,

C. O. PROBST, *Secretary.*

EMPLOYMENT OF CONSUMPTIVES IN SCHOOLS.

NEW HOLLAND, OHIO, *June 2, 1888.*

C. O. PROBST, *M. D., Secretary State Board of Health, Columbus, Ohio:*

MY DEAR SIR: As yet we have taken no steps looking toward the formation of a board of health for our village, or the appointment of a health officer, and the school board (of which I have the honor to be a member) are seriously contemplating the hiring of a teacher for one of the departments of our school, for the next ensuing year, who is sadly afflicted with asthma, and who, I believe, is consumptive. I have not thought it right to do this, and have opposed any such action solely upon the ground that his presence in the school-room may have a tendency to impart the disease to the pupils. He is a good teacher, but I am fearful of possible results, and would be under many obligations to you if you will kindly write me your opinion as to the propriety or impropriety of hiring the gentleman. He is very emaciated and troubled with an almost constant cough. Action will be taken by the board of education on Friday next, and I should like to hear from you before that time.

Very respectfully,

W. A. WELCH, *Mayor.*

OHIO STATE BOARD OF HEALTH,
SECRETARY'S OFFICE, COLUMBUS, OHIO, *June 4, 1888.*

W. A. WELCH, Esq., *Mayor of New Holland, Ohio:*

DEAR SIR: Your letter of June 2, in which you ask regarding the propriety of employing as school teacher a man affected with consumption, is at hand.

In answer, would say: Tubercular consumption, it is now considered, may be communicated by means of a poison or germ contained in the expectoration of a person so affected. It is only when this matter is dried and disseminated that danger arises; and if the expectorations were received in a vessel containing a disinfectant solution, there would be no danger of communicating the disease.

Respectfully,

C. O. PROBST, *Secretary.*

REPORT OF THE NORWALK BOARD OF HEALTH.

The board of health of this city reports to the council that the city is in a reasonably good sanitary condition; or, at least, it is in as good condition as the means at the disposal of this board will permit, but the board cannot report to the council that the con-

dition of the city (in a sanitary point of view) is as good as it should be, in the opinion of the board.

The board, however, congratulates itself that any want of good sanitary condition of Norwalk is not owing to any fault of the same, but to, principally, two causes over which the board has no immediate control. One of these causes is the want of a supply of pure water, the want of which the board scarcely knows whom to blame, but is inclined to lay the blame at the door of the water-works trustees. There was a time, during the drouth of last summer, when the reservoir might have been cleaned, the water being at a very low stage; the opportunity was lost.

The second cause—the want of a good degree of cleanliness of this city this board does not know whom to blame, except the council, and it is the failure, neglect, and refusal of the council to provide the board means of removing the filth and rubbish which is constantly being made in this, as in every city, and the accumulation of which is such a very fruitful source of disease and death. The owners of stores, or other premises, who either wish to, or are ordered by the board, to remove any accumulation of dirt or filth, as a general thing simply carry such accumulation to some other person's premises, not far off, or else to one of the public alleys. By such removals of dirt as above described, the city is in no way cleaned. The pestilence-breeding filth is still in the city, and will surely do a great business in killing our citizens the first time Norwalk is stricken by an epidemic.

The board over a year ago provided a dumping-ground for all the rubbish and filth of the city, free of expense to the city, and this after repeated applications of the board to the council to provide such premises, and a neglect of the council to comply with such requests.

The board also has, for more than a year past, several times preferred requests to the council that it would provide a horse and dump-cart, with a driver, in order that the filth of the city might be periodically and systematically removed. The council, after much debate over the matter, appointed a committee upon purchase of a dump-cart, and that committee, after much travail, purchased a cart; but here the council stuck fast, and any further trouble or expense in this connection seems, on the part of the council, to be entirely out of the question, and no horse has been furnished and no man hired; and the cart, which was furnished after so much labor and consideration, is usefully occupied in standing in a shed. The consequence of the neglect to provide these things is that the city accumulations of filth remain in the city, and will make work for the undertaker during the coming summer. The council is recommended by this board to remember that Norwalk is no longer a small village, but a good-sized city, and increasing in population very fast, and things are now necessary for the well-being of the city that were not requisite a few years ago.

During last autumn Asiatic cholera was brought into the United States by ships from Italian ports. By extraordinary exertions, and the approach of winter, the dreaded disease was for a time controlled. It is believed, however, that the cholera was not eradicated, but only suppressed for the time, and that the seeds thereof, now latent, will, as the warm weather approaches, become active and the cholera spread. What towns and cities it will attack, and how much death it will deal out in such places as it does attack, will, nay, must, as it always does, greatly depend upon the sanitary condition of the towns and cities along that particular path through or along which the cholera sees fit to travel.

Norwalk was once visited by epidemic Asiatic cholera. On the 3d of August, 1854, (the population then being less than two thousand), the cholera struck this city, and for three or four weeks thereafter it was like a charnel house; some forty-six of our citizens lay dead, and that too, with a full one-half of the citizens fled. There are not many persons here now, perhaps, who remember that scourge, but the widows, widowers and children of those who then died are now to be seen walking over Norwalk streets every day. Norwalk was then caught unprepared, and if epidemic cholera should visit us at this time, it would find us unprepared again. The board does not wish to be unneces-

sarily alarming, but what occurred in Norwalk once, when it was but a small village, may well occur, and is more likely to occur, now that it has grown to its present size and population.

The scarlet-fever which has prevailed here so long is still with us, notwithstanding much pains has been taken by the board to eradicate it. Diphtheria has likewise appeared, and several cases have been reported by the physicians of this city. One case of measles has been reported to the board within a few days, and the board has received information that there are a number of cases of that disease in the country around.

The board has recently received a circular-letter from the Ohio State Board of Health, dated Columbus, Ohio, February 7, 1888, stating that reports have been received by that body of the outbreak of small-pox in seven different States, epidemic in San Francisco, and scattered throughout the State of California; more than sixty cases in Brooklyn, New York, and one case in Ohio, near Cincinnati. In these days of facility of travel the small-pox is not likely to be confined to those places where it is now existing, and there is, at least, a reasonable likelihood of its spreading, especially along the great thoroughfares of travel, upon the greatest of which lines Norwalk is situated.

This board, in consequence of suggestions made to it by the State Board, is putting the pest-house of the city in repair. The said pest-house has been much dilapidated by evil-disposed persons; many lights of glass have been broken and other damage done.

This board, unless any serious epidemic should visit us, is not willing to incur any extraordinary expense, remembering, as its members do, the somewhat extraordinary taxation under which our citizens are suffering, and would much prefer that the council should provide such means as the board thinks necessary for the preservation of the health of the city, and the board therefore leaves, so far as it can, all purchases and hiring to the council. At the same time, the board would urge upon the council a ready ear and quick response to its suggestions and requirements, especially as no wants are preferred and no expense suggested until the necessities of each case have been duly investigated by the board, in such a measure as its members conceive the law requires.

The board recommends to the council to provide a place for the lodging and temporary detention of tramps and casual paupers, separate and apart from all places where other persons are detained or lodged or kept, fearing that said tramps and casual paupers may, and most likely will, introduce contagious and infectious diseases and spread the same in the city, unless some different plan is adopted of sheltering those persons than that now used.

The board again recommends that the council find such means for the board as will enable it to carry out of the city its rubbish and filth, and that the council heartily co-operates with the board in keeping the city in a good sanitary condition.

The officers of the board for the past year have been, mayor, P. C. Breckenridge, who is *ex officio* president of the board; health officer, J. A. Jones; clerk, L. D. Strutton; and district physician, Dr. F. Burt.

As to the other requirements of the statute, the board begs to report that the action of the board, "its officers and agents," has been a constant endeavor to preserve the health of the people of the city of Norwalk in spite of all impediments placed in its way.

Respectfully submitted.

P. C. BRECKENRIDGE,
President of the Board of Health of the City of Norwalk.

Attest:

L. D. STRUTTON,
Clerk of the Board.

Monday, March 5, 1888.

REPORTS, ETC., RELATING TO INFECTIOUS DISEASES.

TYPHOID-FEVER.

RAVENNA, OHIO, August 8, 1888.

C. O. PROBST, M. D., *Secretary State Board of Health, Columbus, Ohio:*

DEAR SIR: The case of typhoid-fever reported from here has terminated fatally. The lady was buried last night. The building where she was is isolated from all others, but will have it fumigated. We are watching these diseases closely, and hope to sail clear from all epidemics. Will let you know in regard to our condition as often as possible.

Yours for the cause,

T. R. MASON, H. O.

WEST JEFFERSON, OHIO.

C. O. PROBST, *Secretary State Board of Health:*

DEAR DOCTOR: Your circular does not afford space sufficient to answer the queries, hence this letter. I have been observing carefully the origin of every case of fever I have had in the last 160 days. I have had it appear in four neighborhoods widely separated.

The first case in one of these neighborhoods came from Kansas ill, and of course I know nothing of the probable origin. Later his father made a ten days' visit to Kansas and came home ill with the fever. Later still a sister of the first case became ill. The father's and sister's cases may have originated from association with the first case. The surroundings of this family were good, such as most good farmers have.

My next family was one I wrote you of some weeks ago. They were renters, poor but well fed. Surroundings all right with exception of well, which was literally the center of a hog-wallow. Four cases in this family, the three last possibly originating from poison from excreta of the first. No other cases in the neighborhood.

The first case in the third neighborhood originated under much the same circumstances, viz., low water and filthy surroundings of the well. Seven cases followed in the neighborhood, five of which were occasional visitors or nurses at the house where the first of the group originated.

In the fourth neighborhood there was only one case. The well surroundings seemed all right, but the water was so offensive that I forbade its use.

These neighborhoods are widely separated, and with the exception of the first given above, the initiatory cases were parties (females) who had not been from home and could not, it seems to me, have been exposed to any poison the result of typhoid-fever.

My last case is in the neighborhood given as the third above, though not within one and one-half miles of any family having the fever. When I first treated him I found the family using water from a pool fed by a tile, getting the water at a point two hundred yards from the house, the well being dry, I supposed. The water supply seemed unobjectionable. Later, I learned why they were getting water from the pool. The water in the well had become so offensive that they could no longer use it. The patient had been nauseated with the water for two weeks before they quit using it. I had the well cleaned to see what I would find. I found an accumulation of abominations—mud, oyster-cans, bones, and, worse than all, the partially decomposed body of a large rat.

I give these particulars as my reasons for saying that I believe these cases have originated from a poison generated upon the premises, and not depending on the presence of specific poison, or rather, that the specific poison has had no connection with typhoid-fever excreta. It is impossible, in my opinion, that they could have been so exposed, as

we had no typhoid-fever here for years, and the first cases were parties who probably had not been off their own premises for months. Situated as you are, and as most observers are who have written on the subject, in a city, it is easy to account for all cases on the Budd theory, but I find it impossible to reconcile facts as they occur in the country with that view.

You will have noticed that I do not disinfect the discharges. Why? Because here in the country my plan of burying them is better. Of course, I attach no importance to covering them over; in fact, I think it would be better to throw them on the surface, if I could have it done where I wished. The point I make is to have them deposited, not in a privy-vault, but at some point so remote from the water supply as to preclude any possibility of contamination. By selecting a proper place, and impressing upon the family the necessity of *burying* them there, I secure the removal of excreta from near the house or well. If I only directed that they be thrown out at the point selected, they would take the liberty of throwing them out at any convenient place. If they understood that the disinfectant done away with all danger of contamination they would be still more careless as to where they deposited them. For these reasons, believing, as I have for thirty years, that typhoid-fever and dysentery were propagated in some way by the discharges from the bowels, I have followed this plan of having such discharges moved promptly from the dwelling, and neighborhood of the water supply, and buried, the latter formality being directed more as a means of securing attention to the main thing of getting the excreta at a safe distance from the family.

There has been much of interest in the fever here this fall, as there has been many points of difference between cases now and other years. Among these is the very slight increase in the pulse rate, in few cases it going about 100, and in many remaining almost normal; in the larger proportion of cases in which the rose-colored eruption is found; in the larger proportion of cases in which intestinal hemorrhage has occurred, and in the marked absence of diarrhœa. These matters, however, have no special interest for you.

Will you pardon this letter, which is three times as long as I contemplated, or, perhaps, is called for.

Very truly yours,

J. N. BEACH, M. D.

CONNEAUT, OHIO, *October 11, 1888.*

DEAR SIR: Another case of typhoid-fever has just been reported to me, it being the third case occurring in a certain row of tenement houses since the 7th of September. I went to-day to inspect the premises. This row of eight houses was erected about three years since on a farm property that had just been platted, in the western part of the village, and might be called virgin soil. Surface, yellow sand, for four to six feet, then gravel. A tube had been driven down to the gravel, which furnished a good supply of excellent water; but I am convinced that this well has become contaminated by the custom of the tenants daily throwing out their slops and garbage upon the surface in close proximity to the well. The surface of the ground is dishing toward the well, which is in the lowest part of the lot. Summer and winter, for the two years past, I am told, this has been very filthy; all sorts of filthy matter thrown out so as to saturate the porous soil to a great extent.

I suppose that it is generally considered that a driven well is safer from contamination than one that is excavated; but in this case I am convinced that this well is poisoned by the saturation of the soil with slops, etc.

I have recommended the drawing of the tube and abandoning this well, and also that they correct their habits of caring for their slops. The owners of the property, on being notified, agreed to attend to it at once.

Respectfully yours,

E. D. MERRIAM, M. D., H. O.

PROCTORVILLE, OHIO, *January 12, 1888.*C. O. PROBST, M. D., *Columbus, Ohio :*

DEAR SIR: Your letter of the 11th instant is at hand, making inquiry as to some typhoid-fever cases recently reported by me to the State Board of Health, and apparently caused by the spring and well water in West Virginia.

As to the water being contaminated with fecal matter, I cannot establish that as a fact, but I can establish it as an exceedingly reasonable probability. I made no analysis of the water, neither did I collect any for subsequent analysis by any one else.

The following description of the surrounding country directly back of the springs is offered, at the same time apologizing for its length :

The Ensign Manufacturing Co.'s Works, of Huntington, W. Va., employing about 1,000 men, are situated on the river bank, on moderately high ground, but immediately back there was formerly a very large pond of stagnant water, but it has been drained into the river. One ditch running under a part of the buildings is encased with stone and covered with dirt, but some of the privies empty directly into this ditch.

The large wells, that supply the water for the works (for all purposes), are sunk within the buildings to the gravel bed of the river, and the springs spoken of come out from under the banks directly opposite the buildings.

There were four of my cases that were employed there and drank the well water; seven cases on the Ohio side of the river used the water from the springs, and these seven were in four families, all drinking the water from the same spring. It would seem that the contamination would filter through the soil to the gravel bed, so that the wells and springs, being close together, would have equal chance of contamination.

Let me say here, too, that only a few years ago I had twenty-eight cases within a few weeks, all of whom drank well water.

I neglected to say that there had been a number of typhoid cases at the works, and near by, before my patients were taken down.

I submit the above for your consideration, hoping that it may be of use to you.

Respectfully,

G. R. RICKETTS, M. D.

PROCTORVILLE, OHIO, *January 20, 1888.*DR. C. O. PROBST, *Columbus, Ohio :*

DEAR SIR: Your letter of the 16th inst. at hand, and in reply would state that I cannot at present give you the exact distances, but can give them approximately. Should you require them to more exactness, I can get them for you by going over three miles especially for that purpose.

The buildings are very large and the privies are just outside the buildings, surely less than one hundred feet from the nearest well, as near as I can remember, although I made no definite calculations. There are no separate vaults nearer than a few hundred feet, but all of the privies of the works are built over the arch of the ditch spoken of before, emptying directly into it, so far as I observed. As to the chances of *direct* infection, I can't say, but there is an indirect chance, I think, by percolation.

Of the twenty-eight cases, I merely spoke incidentally. They were in a country practice of a number of miles, and were in many separate families. None had any connection with Ensign cases, but were interesting from the fact that not one used other than well or spring water. I could give a history of each case, but, of course, their being scattered about so, I could not then prove a chance of infection by fecal matter.

I am sorry that I cannot be of more service to you, but am willing to help you in any way I can.

I would say that the springs are several hundred feet from the wells, are *under the bank*, but in line with the ditch.

Very respectfully,

G. R. RICKETTS, M. D.

The following interesting report is from Dr. S. P. Deahofe, of Potsdam, Miami county. It furnishes a most striking example of the manner in which typhoid-fever is spread, and the value of disinfection and cleanliness in arresting the disease:

In the fall of 1883, a gentleman living in Indiana contracted typhoid-fever. When well enough to travel his wife brought him to her father's house (her father at that time lived in this locality), and while there she also contracted the disease, which ran a very typical course. No isolation or disinfection was practiced, her stools being emptied into a privy within seventy-five feet of the well. Her clothes were washed in a building with a loose floor, immediately over the well. In a short time her father's family contracted the disease, four members of which died.

The above history I obtained from the attending physician, when I was called in consultation. Since then I have had personal observation of the following cases directly connected with the above named cases. One of the sons of the afflicted family, after recovery, went to live with a neighbor. In a short time this family also contracted the disease, the father dying. The same conditions existed as to disinfection as in the previous family. While this family was sick, two brothers-in-law visited them, assisting in caring for their wants, drinking water from the already infected well. Both of these men, with their families, contracted the disease, one of the men dying. In one of the families disinfection and cleanliness were rigorously carried out, with the result that no case has yet arisen from that place. In the other family disinfection was not carried out, notwithstanding my directions, and ere this family had recovered, a sister, who had often been in attendance, contracted the disease and died, and two of her children also contracted the disease, but recovered. A neighbor-girl was employed a year after in the family in which disinfection was neglected. Soon she contracted the disease, returned home and died. The mother, a sister and two brothers also contracted the disease, and two more died. Of these last cases I wrote you some time ago, how, in spite of warning, the vessel containing the discharges of the patients was emptied upon the ground, not far from the well. What cases will follow this gross neglect, remains to be seen.

Here is the history of twenty-three cases of typhoid-fever, with ten deaths, all due to an infected water supply, from carelessness in the disposal of the discharges of the patients.

In answer to an inquiry as to the manner in which the disease was carried "by one of the sons of the afflicted family *after recovery*," Dr. Deahofe writes as follows: "I have just interrogated one of the family first afflicted. He informs me that this son of whom I spoke had not recovered entirely, but went to live with his neighbor, when he should have been in bed (he was still suffering with diarrhoea); that a daughter of this same family did not take to her bed until about the third week of her illness, but afterwards died, showing the apparent mildness of the disease." In regard to the girl who contracted the disease *a year afterwards*, he writes: "It is impossible to say just how she contracted the disease, but that she had been no place other than there, and that she was there continuously, and sickened while there, is conclusive evidence that the poison of the disease had been lurking somewhere at this house—whether in some soiled linen or what-not, I cannot say, except that I do know that the family are not scrupulously clean about their linen."

"No case has yet developed traceable to the case where rigid disinfection was carried out."

SPRINGFIELD, OHIO, *October 16, 1888.*C. O. PROBST, M. D., *Secretary State Board of Health:*

DEAR DOCTOR: Yours of the 15th inst. received this A. M. Since I wrote you, some five new cases of diphtheria have been reported and one of scarlet-fever.

Our physicians are required to report diphtheria, scarlet-fever, small-pox and measles, but not typhoid-fever. I have not insisted on the latter, because the great difference of opinion as to what is typhoid-fever would destroy all scientific value of such reports.

I have had analysis made in a number of cases of well water in our city. Uniformly bad, with one exception, and that, strange to say, from a well right in the heart of the city. Our public water is good.

Yours truly,

DR. H. H. SEYS, H. O.

SCARLET-FEVER.

DEGRAFF, OHIO, *January 24, 1888.*

C. O. PROBST, M. D.:

DEAR DOCTOR: Yours of yesterday at hand and noted. The report in the *Enquirer* is true in one sense. We have scarlet-fever; have had, all told, perhaps twenty cases rather mild; some very bad cases. We closed our schools for two weeks, to see whether it would be an epidemic or not. There have been no new cases this week so far, but I will see that the circulars are distributed if you send them.

Respectfully,

W. W. HAMER, M. D.

OHIO STATE BOARD OF HEALTH, SECRETARY'S OFFICE,

COLUMBUS, OHIO, *June 19, 1888.*GEO. H. THOMAS, M. D., *Auburn, Ohio:*

DEAR SIR: Your report for June 15 says: Scarlet-fever in a family of Danes just arrived.

Can you inform me as to the port at which they entered the United States, and whether the child was ill when they landed? If so, whether they were detained in quarantine, and how long?

Please notify me if other cases develop from this one.

Yours truly,

C. O. PROBST, *Secretary.*AUBURN, OHIO, *June 20, 1888.*C. O. PROBST, *Columbus, Ohio:*

DEAR SIR: Yours received. On inquiry, I find this family were well when they left home, and also when they arrived in this country. They tell me they saw a sick man at the union depot in Cleveland, but do not know what was the trouble with him. They arrived here Thursday, and she was taken sick Saturday morning and died in less than a week.

No other cases have resulted from it, and as it has been so long I do not look for any trouble.

Respectfully,

DR. THOMAS, *Auburn, Ohio.*

P. S. This family landed at Castle Garden, New York.

MEASLES.

SENECAVILLE, OHIO, *June 13, 1888.*C. O. PROBST, *Columbus, Ohio:*

DEAR DOCTOR: In answer to yours of the 11th inst. will say that we are having quite an extensive epidemic of measles, but with the exception of a few cases in the families of some miners living here, who violate every law of a sanitary character except ventilation, which their houses force them to observe, there has been none of any gravity. I have probably seen fifty cases in the past two weeks. There have been no deaths among any of them. At the present the epidemic is abating.

I neglected to send in report weekly, but will be more prompt in future, and if anything occurs of general interest will inform you.

There are several cases of diphtheria in vicinity of Lore City, a railroad station four miles north of here, a locality where, for the past two years, the disease has appeared to be epidemic. Two years ago there were a number of deaths in the same locality. I have had none under my care.

Yours respectfully,

A. R. CAIN, M. D.

DELTA, OHIO, *April 2, 1888.*

C. O. PROBST:

DEAR SIR: Sixty cases of measles have occurred a few miles from town, from a single exposure at an exhibition held in the neighborhood. I would be pleased to receive the "Manual of Health Laws of the State," also "A Circular to Municipal Authorities," as mentioned in the March number *Sanitary Record*.

Yours,

S. P. BISHOP, M. D.

DYSENTERY.

PEEBLES, OHIO, *August 8, 1888.*DR. C. O. PROBST, *Columbus, Ohio:*

DEAR SIR: Yours of the 4th inst. to hand. The disease which has been prevailing in the vicinity of Rarden, Scioto county, is epidemic dysentery in severe form. Probably forty deaths have occurred within a radius of five miles. But a number of them have been caused by cholera infantum. We have treated about forty cases of dysentery in the last month, with four deaths. Have seen a few others in consultation, which resulted fatally. The disease is still prevailing, but the fatality is not near so large as reported. It has been greatly magnified by some newspaper correspondents.

The fatal cases were mostly among families in poor circumstances, not well nourished nor well nursed during sickness.

We are unable to assign any specific cause for the epidemic—it seems to be subsiding where it first appeared, but has appeared in other parts of Scioto, Adams and Brown counties, quite a distance from where it first broke out.

Hoping this may be satisfactory, we are,

Yours respectfully,

DRS. BERRY & WITTENMEYER,

TYPHUS-FEVER.

BLAKESLEE, OHIO, *March 10, 1888.*C. O. PROBST, M. D., *Secretary State Board of Health, Columbus, Ohio:*

DEAR SIR: Am at a loss to account for the cause of the typhus-fever, as there were no other cases, and none have developed since. The disinfectant used was carbolized

water. Used soda-water bath. Case was convalescent by the fifteenth day after taking sick. Home surroundings were in a good sanitary condition, as far as I was able to observe.

Yours truly,

G. E. STARNER, M. D.

YELLOW-FEVER.

XENIA, OHIO, *September 26, 1888.*

DEAR DOCTOR: The refugees [from yellow-fever] have arrived; they were within sixty miles of the infected district; none of their baggage was exposed in any way. The head of the party is himself a physician (Dr. D. E. Sphar), and was very careful, coming through from Crescent City in closed cars.

I do not anticipate any trouble. Their baggage was quarantined, and thoroughly fumigated. Will keep you advised if any suspicious cases should come under my notice.

Very respectfully,

A. L. DRYDEN, M. D., *Health Officer.*

To Dr. C. O. PROBST, *Secretary State Board of Health, Columbus, Ohio.*

CEREBRO-SPINAL MENINGITIS.

COLDWATER, OHIO, *April 4, 1888.*

DR. C. O. PROBST, *Columbus, O.:*

DEAR SIR: In reply to yours of March 30th, would say that I have, since February 8th, treated twenty-eight cases of cerebro-spinal fever, which appeared within three miles of Coldwater; thirteen of the cases proved fatal, four died within six hours, seven within forty-eight hours, two lived eight days; the remainder made a good recovery. Of all cases treated, twenty-three were males, and five females. I do not consider cerebro-spinal fever contagious. I think the disease arises from atmospheric condition, some unknown epidemic agent, which poisons the blood; the local lesions are brought about by some exciting cause, such as exposure to cold, damp weather.

Fraternally yours,

C. F. BOLMAN, M. D.

P. S. If any more cases appear, I shall report.

DIPHThERIA.

NEW PETERSBURG, HIGHLAND COUNTY, OHIO, *December 8, 1887.*

State Board of Health:

DEAR SIR: The first case was contracted at Rainsboro, three miles from here, and spread by the children of the family attending school, beyond a doubt. No precautions have been used by any of the families having it. I have used all my influence to prevent its spread, but of no avail. Children have been taken to church before exfoliation was complete. Nothing but compulsory restraint would be of any use.

You will please send circulars in regard to restriction and prevention, etc., to me, and I will distribute.

Very respectfully,

RUFUS A. DWYER, M. D.

COLUMBUS, OHIO, *January 12, 1888.*

To the Mayor of Negley, Ohio:

DEAR SIR: Will you have the kindness to inform us what truth, if any, there is in the report that Dr. C. N. Vale of your town, and two of his children have died of diphtheria, contracted by viewing with the microscope, the membrane taken from the throat of a child dying of this disease.

The report has gained a place in a sanitary journal, and if not true, we desire to correct it.

Respectfully,

C. O. PROBST, M. D., *Secretary.*

NEGLEY, OHIO, *January 14, 1888.*

C. O. PROBST:

DEAR SIR: There being no mayor in the town of Negley, I took the liberty to open your letter addressed to the mayor of Negley, supposing you wanted some information. Everything is true as you have stated it, excepting that but one child died. The whole family, consisting of the doctor and seven children, were down with the disease, the mother being away at the time. At this writing the rest of the family are well.

Yours truly,

D. D. BLACKMORE, *Ass't P. M.*

HURON, OHIO, *January 26, 1888.*

C. O. PROBST, M. D., *Secretary Ohio State Board of Health, Columbus, O.:*

DEAR DOCTOR: On January 15th a case of diphtheria was reported to me, the same being a child seven years old. The family, mother and six or seven children, live in a small house of about two rooms, and I suppose that during the cold weather they all crowded pretty close together. There has been no case of diphtheria here for some time, and this is a sporadic case. The case developed into croupous diphtheria, and the child died the 23d. Two more children were taken and are sick now. I quarantined the whole family at once, took part of the family out of the house, and, as far as I know now, there are no other cases. We are taking all precautions, and I simply report this, as I understand that such is your wish. Please send pamphlet on diphtheria to Drs. E. J. Goodsell and F. W. Morley here. My weekly reports are often forgotten, for want of time, but will try and do better in future.

Fraternally yours,

J. P. ESCH, M. D., *Health Officer.*

MILK SICKNESS.

CELINA, OHIO, *July 19, 1888.*

C. O. PROBST, M. D., *Secretary Ohio State Board of Health, Columbus, O.:*

DEAR DOCTOR: Your communication of the 17th inst., requesting a full report of cases of milk-sickness coming under my care, and others occurring in the neighborhood, received.

I will partially conform to your request at present by sending you the clinical history of a typical case, and hope to make a full report, at the close of the season, of all cases coming under my care, and such other facts as I can learn from the profession in this section, having to do with the disease.

On July 5, I was called to see Mrs. K., whose condition was: temperature 98°; pulse 100, soft; tongue coated very heavy, white along the edges, with a dirty yellow in the center; bowels obstinately constipated; constant nausea; complete anorexia; extreme insomnia; skin moist; pupils dilated; face flushed; urine scant and high-colored; liver and spleen perceptibly enlarged; no pain or soreness anywhere.

July 6, temperature 97°·5; pulse 112.

July 7, temperature 97°; pulse 122.

July 8, temperature 96°·4; pulse 134.

July 9, temperature 96°; pulse 154—very feeble and somewhat irregular.

Up to this time we had given morphine, bismuth, nux vomica, ipecac, calomel, quinine, soda and carbolic acid in various doses and combinations, with very unsatisfactory results. Not an ounce of nourishment nor drink of any kind had been retained for seventy-two hours. She had not slept to exceed one-half hour for forty-eight hours. At this visit I gave alcohol, four ounces, in four ounces of hot water, at one dose, which was retained. In thirty minutes I gave one ounce of rochelle salts in four ounces of buttermilk, which was also retained. Ordered four ounces of whisky every four hours; one ounce of rochelle salts every four hours until bowels had acted efficiently; and then continued in dr. doses every four hours. Also ordered two ounces of cornmeal gruel as nourishment every three hours.

July 10, temperature 98.4°; pulse 116; had slept almost continuously since my last visit, the day before. Suffice it to say that she made a good and rapid recovery on salts, whisky and cornmeal gruel.

I have so far treated thirty-four cases in this manner, none of whom have reached a critical condition, and am led to believe that this treatment is as certainly specific as quinine is in intermittent fever.

In a few cases there has been some fever, which I have regarded as a malarial complication, as it yielded readily to quinine, without making any impression on the peculiar characteristics of the disease.

I am convinced, from a careful study of cases during two summers, that it is an acute infectious disease, propagated by a specific poison.

It rarely manifests itself before the middle of July, but this year made its appearance about the middle of June.

Very respectfully yours,

J. M. LISLE, M. D.

LEPROSY.

OBERLIN, OHIO, *June 21, 1888.*

To Grover Cleveland, President of the United States:

MOST HONORABLE SIR: Oberlin has one of the cases of leprosy among its laundrymen. He has been exiled from China and came here from "Hop Wo" society of San Francisco, California. If you can do nothing about it please inform us who the proper authority is to whom we may apply. I shall be pleased to hear from you soon.

Truly,

HUIR NUM.

The above communication was referred to the Supervising Surgeon-General of the Marine Hospital Service, Dr. John B. Hamilton, and by him referred to the Ohio State Board of Health.

A letter of inquiry from this office to the Mayor of Oberlin met with the following reply from the attending physician:

OBERLIN, OHIO, *June 28, 1888.*

Ohio State Board of Health, Columbus, Ohio:

GENTS: Yours of the 27th was handed me by the mayor of our city, stating that a report had reached you that a case of leprosy existed in our city in the person of a Chinese laundryman. I took care of that laundryman for another trouble. There is no case of leprosy here. The laundryman contracted syphilis, that gave rise to the story.

Yours truly,

H. WILSON, M. D.

NUISANCES.

WAVERLY, OHIO, *June 27, 1888.**To the State Board of Health, Columbus, Ohio :*

GENTLEMEN : I take the privilege of writing to you for the purpose of informing you of a large pond of water which is in our town, and is very unhealthy. It belongs to Jas. Emmitt; we have asked and coaxed him to abate it, but he will not. We have laid the case before the the council, but it seems they will not do anything with it. It is a pond of stagnated water, covering, probably, one-half acre of ground; had formerly been used for a saw-log pond. It has been there for some twenty years. There is a gutter running into it from the street, and it has become so filthy that it smells very bad. I am located just across the street from it with a store and dwelling-house. We are sick so much, and the doctors say the pond is the cause of it. Mr. Emmitt said, last summer, when we just begged him to abate it, that he did not need the pond, but he would not do anything with it. So if you can do anything to cause him to cleanse it, we do hope and pray that you will at an early date, for the pond is dangerous to the health of our neighborhood. We can furnish you with depositions from our best citizens if you want them, or we refer you to Peter Hays, our banker, or Wm. B. Lee, about the condition of this pond. Do please give it your earliest attention.

H. T. DAYTON.

OHIO STATE BOARD OF HEALTH, OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, *June 28, 1888.*H. T. DAYTON, *Waverly, Ohio :*

DEAR SIR : Your letter in regard to a stagnant log-pond in your village is to hand. The State Board of Health has no power to abate a local nuisance of that kind; a local board of health would have full power to do so. Your council is violating the law in not providing for a board of health in your village, and your best means for relief from the log-pond nuisance is to unite with your citizens in demanding a board of health.

Respectfully,

C. O. PROBST, *Secretary.*MIDDLETOWN, OHIO, *July 17, 1888.*DR. PROBST, *Secretary State Board of Health, Columbus, Ohio :*

DEAR SIR : I desire to ask you a question of the greatest importance to the health of my family. We live a few rods outside of the corporation of Middletown. Our next door neighbor, a market-gardener, has established his pig-pen less than fifty feet from my house, using the line-fence between us as a part of his pen. He throws great quantities of stale and decaying vegetables to his hogs, and has never, to my knowledge, cleaned out his pen or done one thing to prevent the most horrible stench that can be imagined. We are obliged to keep doors and windows closed during hot weather, and with all possible care we are all sick with malaria, dysentery and such troubles most of the time. We would try and get away, but the above described conditions prevents us from selling, or renting to any one who would take care of our property.

Now, what I wish to ask you : Do the sanitary laws apply to such a case in this State? And if so, what course shall I pursue to have the nuisance abated? The city authorities tell me they would give us relief if we were not, unfortunately, outside the corporation, and though there has been much talk of extending the corporation, there will probably be nothing done toward it this summer.

An early reply to this will be a great favor.

Very respectfully,

F. S. TANZEY.

UPPER SANDUSKY, OHIO, *September 7, 1887.*C. O. PROBST, *Secretary State Board of Health, Columbus, Ohio:*

DEAR SIR: This morning I have written to C. W. Saddler, H. P. Ingalls and Cyrus V. Osborne, members of Game and Fish Commission, and, pursuant to a suggestion from the Secretary of State's office, I also write you concerning the matter. Last summer the waters of the Sandusky river were so poisoned at this place that tons of fish in the river were thereby destroyed and rotted along the river, and the health of many was seriously affected. The same destructive agencies are at work again, and like results are again being wrought. The cause of all this mischief is right here at Upper Sandusky, but where the blame should rest is a disputed question. The river water last summer was perceptibly polluted as far down the river as Tiffin. The atmosphere along the river is poisoned by it, the health of many is seriously affected, and the hot-bed of some epidemic is already established. The cause of this should be determined, and we invoke the powers of your Board to point us to the cause of all this mischief.

Respectfully, your obedient servant,

ALLEN SMALLEY, *Prosecuting Attorney.*

The above communication was duly received, and Mr. Smalley was requested to furnish us samples of the water from the Sandusky river for analysis.

It was learned that a straw-board works, situated on the banks of the river, was emptying its waste into the river, and was the probable cause of its pollution. Fish were confined in boxes which were placed one in the river above the works and one in the river below. The fish in the box above remained lively and uninjured, while those in the box below were killed in a short time.

Four samples of water were taken from the river and examined by Prof. C. C. Howard, chemist of the Board, who made the following report:

WATER FROM UPPER SANDUSKY RIVER.

- (1.) Above straw-board mill.
- (2.) Below straw-board mill.
- (3.) From discharge end of filter at mill.

Grains per Gallon.

	Lime.	Chlorine.	Mineral matter.	Organic and volatile.	Total solids.
(1.).....	13.06	.41	24.26	9.45	33.71
(2.).....	43.64	4.38	66.73	36.05	102.78
(3.).....	72.86	10.85	114.67	739.97	854.64

CURTIS C. HOWARD, *Chemist.*

The prosecuting attorney, Mr. Smalley, was indefatigable in his efforts to abate this nuisance, and in a letter of January 20, 1888, announced the results as follows:

"We were completely successful in our proceedings against the company, and the straw-board works here have been abandoned; our river assumes its normal condition again and our people are happy. I am thankful to you for your kindness, and hope that your scientific labors may be crowned with the success which you seek."

LETTERS FROM SUPERINTENDENTS OF PUBLIC SCHOOLS.

Mention was made in our last report of a circular letter relating to contagious diseases in schools, which was sent at the close of the year (1887) to superintendents of public schools.

In reply, letters were received from the following places: Eaton, Bellefontaine, Marietta, Shiloh, Gallipolis, Barnesville, Sandusky, Bryan, Martin's Ferry, Columbus, Lancaster, Woodstock, Cadiz, Genoa, Nevada, Fremont, Lithopolis, Uhrichsville, Mt. Vernon, Elyria, Republic, Utica, Wauseon, Granville, Circleville, Lebanon, Port Clinton, Bridgeport, Glendale, Cleveland, New Lexington, South Charleston, Toledo, Xenia, Tarlton, Norwalk, Marysville, New Paris, Pomeroy, Blanchester, West Cleveland, Ada, Waverly, Proctorville, Harmar, Port Union, Independence, Massillon, Ravenna, Oberlin, Lowell, Collinwood, Somerset, Covington and Clearport.

In regard to the vaccination of school children, the following places report that the rule requiring vaccination is strictly enforced:

Toledo, Sandusky, Bridgeport, Genoa, Circleville, Lebanon, Wauseon, Marysville, Cleveland, New Paris and Port Clinton; Columbus has recently adopted such a rule.

The superintendents of the following places promised to bring the matter before their respective school boards for consideration: Glendale, Lithopolis, West Cleveland, Woodstock, Ashtabula, Gallipolis, Harmar, and Nevada.

In answer to requests made for contagious disease circulars, nearly 30,000 were sent out with the guarantee that they would be placed in the homes of the school children.

The following representative letters from superintendents of schools have been selected for publication as showing their appreciation of this work:

XENIA, OHIO, *November 22, 1887.*

C. O. PROBST, M. D., *Columbus, Ohio:*

DEAR SIR: Your circular-letter and enclosed circulars duly received. I regard the movement to distribute such *circulars of information* as a most excellent thing to do, and will take pleasure in causing them to be distributed among the school children of this city so that one of each kind will get into each family represented. If you can send me about 500 of each, do so. We are having some typhoid-fever and diphtheria in this city. If you have any blank forms that you would like to have filled out, if I can do so, I will be pleased to accommodate you.

Respectfully,

E. B. Cox.

TOLEDO, OHIO, *March 28, 1887.*

DR. C. O. PROBST:

DEAR SIR: We have very strict rules, which are observed, concerning contagious diseases. I would like, however, to disseminate some information as to the prevention and treatment of these forms of contagious diseases. I have about 8,000 pupils in daily attendance, and would be pleased to distribute as many of the pamphlets, of which you sent sample copies, as you think best. I could place to good advantage two or three thousand each of the scarlet-fever and diphtheria papers, among the poorer and more ignorant population.

Yours truly,

H. W. COMPTON.

ASHTABULA, OHIO, *December 3, 1887.*

DR. C. O. PROBST:

DEAR SIR: In reply to the circular sent me a short time since, I would say, I brought the matter before our board of education, at their last meeting, and a rule was adopted that when teachers know, or have reason to believe, that any of the members of their school are affected with or have been exposed to any contagious disease, they shall send them home and not allow them to return till they have received a certificate from a physician that they may safely attend school.

Yours truly,

I. M. CLEMER.

OFFICE OF SUPERINTENDENT OF INSTRUCTION,
CLEVELAND, OHIO, *November 85, 1887.*DR. C. O. PROBST, *Secretary State Board of Health:*

DEAR SIR: I beg to acknowledge the receipt of circulars. I am impressed with the importance of the circulars relating to the prevention and restriction of certain diseases, and feel confident that we shall want many of these for distribution in our schools.

We have a rule requiring that *all* pupils shall be successfully vaccinated *before* they can enter our schools. This rule we *rigidly* enforce.

Very truly,

L. W. DAY,
*Superintendent of Instruction.*MT. VERNON, OHIO, *November 22, 1887.*

GENTLEMEN: Your circulars received. I would like to have enough of those on diphtheria and scarlet-fever to supply each family sending to our public schools; 500 or 600 of each would, perhaps, be required. We have lost two or three of our pupils from diphtheria during the present month. There are not very many cases in the city, but a word in time might be of incalculable value. Your circulars are excellent.

Very respectfully,

J. A. SHAWAN, *Superintendent.*

MISCELLANEOUS.

POISONED BEEF.

PORT WASHINGTON, *December 1, 1887.*C. O. PROBST, M. D., *Secretary State Board of Health, Columbus, Ohio:*

DEAR SIR: I have this day examined several persons who purchased and ate of the suspected beef, and I desire to report as follows: No physician was called to treat any of the cases, but they all treated themselves with home remedies. So far as can be

ascertained, four families in this town purchased of the beef; the remaining quarter was sold somewhere else, but we cannot learn where.

Mr. B.'s family partook of the beef Tuesday noon, November 15th, and nothing was observed until after night, when Mr. B. complained of feeling unwell and retired; soon cramping pains in stomach and bowels came on and continued till about 3 A. M. of next day, when violent purging commenced and continued several hours. His wife did not get sick until Wednesday after dinner, but she ran through the same course that her husband did, and their children all presented the same symptoms, some being milder and less severe than others. On Thursday, 17th, they again partook, with the same result, the husband taking sick during the night in the same manner as before, and he was followed by the remainder of the family. By this time the cause of the trouble was suspected, and they ceased to use the meat, and they all recovered shortly after.

The other families present about the same history, except that some of them took on dysenteric symptoms, as bloody and slimy stools, with tenesmus and griping pains. Of about twenty who used the beef, I am informed there were two or three who did not seem to be affected at all, and two others who complained of formation of gases in stomach and bowels, but no purging. One family gave meat to a neighbor family and to a relative in another town, and these families both say that they were affected like cases described. One of the purchasers of the beef gave a piece of it to his dog (after he suspected it to be the cause of their trouble) and the dog soon showed signs of distress and pain, and in a couple of hours was taken with severe purging, which lasted several hours.

There is no contagious disease prevailing among cattle here, and we can find out nothing about the condition of this beef before slaughter. The seller of it claims that it was perfectly healthy, and that the meat is now healthy.

There are no diarrhœal or dysenteric troubles prevailing now, nor have there been lately.

Diligent inquiry fails to discover any other possible cause of these cases, and I am almost forced to the conclusion that the beef was the real cause.

Hoping that this will be a satisfactory reply to the inquiries of 29th to our mayor,

I am, very truly yours,

D. M. KINSEY, M. D.,
Member Port Washington Board of Health.

N. B. The above statements are susceptible of proof by good witnesses. I saw none of the cases while sick, but the statements of these parties can be relied upon.

D. M. K.

The sample of meat received from the mayor of Port Jefferson was in a state of commencing decomposition, and therefore no chemical examination of it was made. We were unable to obtain a second sample in a fresh condition.

BAD SEWERAGE.

BUCYRUS, OHIO, *June 20, 1888.*

DEAR SIR AND GENTLEMEN: As there are no epidemics prevailing, and hence nothing of greater importance to communicate than the action of the Bucyrus council at its last regular meeting. On motion, the street commissioner was instructed to put in position a large wooden apron at the openings of our main sewer, in order to prevent the current of air passing through from carrying the gases out through the inlets, which are not trapped. The main sewer was open at both ends, and more elevated at its eastern

terminus, so that a constant current of air passed through it, and thus it ventilated itself.

Now, the council intends to defeat the object for which the sewer was constructed, and, instead of trapping the inlets, will trap the main sewer by a wooden apron, and pen up the gases, or force them to seek an outlet, by entering into our dwellings, and this prematurely, without warning, or giving the citizens time to remove their families to a safe distance from the city.

I would be pleased to hear comments by the State Board of Health before I will make any further suggestions.

Cordially and sincerely yours,

J. B. KREIDER, M. D.

OHIO STATE BOARD OF HEALTH,
SECRETARY'S OFFICE,
COLUMBUS, O., June 27, 1888.

DR. J. B. KREIDER, *Bucyrus, Ohio:*

DEAR SIR: Your letter duly received informing us of the intention of your street commissioner to "place a large wooden apron at the opening of your main sewer in order to prevent the current of air passing through from carrying the gases out through the inlets which are not trapped."

Such a mistake should never be made, as the attempt to pen gas in a sewer may lead to the worst results. According to the principles of sewerage now held, main sewers, laterals and house-drains should all have the freest possible ventilation, with a ready escape for all gases that may be formed. It is only by such arrangement that house-traps can be depended upon to exclude sewer gas. Unless vent-holes or man-holes are provided in your system of sewerage, the danger from the apron in question would be greatly increased.

Has a board of health been organized in your city? If so, its attention should be called to the matter.

Yours truly,

C. O. PROBST, *Secretary.*

REPORTS FROM CORRESPONDENTS

IN ANSWER TO QUERIES IN REGARD TO THE LOCATION, ORIGIN AND SPREAD
OF TYPHOID-FEVER, SCARLET-FEVER AND DIPHTHERIA.

During the latter part of 1887, and early part of 1888, an attempt was made to secure information in regard to the location, origin, etc., of cases of infectious diseases reported to the Board by regular correspondents. Accordingly, on the receipt of a report of a case of typhoid-fever, scarlet-fever or diphtheria, a blank form was furnished to the physician reporting, a separate blank being used for each case reported.

The questions asked in regard to typhoid-fever were:

1. Where does the patient reside?
2. Are there other cases of this disease in the same house? How many?
3. Are there other cases in the neighborhood? About how many?
4. Has a case of typhoid-fever ever occurred in the house in which the patient resides, and if so, how long since?
5. Please state any facts known regarding the origin of this case?
6. Whence is the drinking-water used by the patient obtained?
7. Is this water liable to contamination from any privy-vault, cess-pool, or other source?
8. Were the stools of the patient disinfected, and how?
9. Please state any other facts known of interest in determining the origin of this case or manner of spreading the disease.

In the scarlet-fever blank the following questions were substituted for No. 6 and No. 7:

6. What measures were used to prevent the spread of the disease? (Isolation, disinfection, quarantine of members of the family, private funeral in case of death, etc.)
7. What success in restricting the disease attended these measures?

In the diphtheria blank, in addition to these two last questions, it was asked:

“What is the sanitary condition of the house and surroundings?”

TYPHOID-FEVER.

TABLE BASED UPON 225 REPORTS OF TYPHOID-FEVER, SHOWING LOCATION, ORIGIN,
WATER SUPPLY, MEASURES OF PREVENTION, ETC.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
	1887.					
1	Aug.	Near East Liberty.	No.	No.	No.	Nothing known.
1	Aug. .	Zanesfield.	No.	Yes.	No.	Nothing known.
1	Aug.	Near Zanesfield.	No.	No.	Yes.	Very low water in well.
1	Sept. 6.	Near DeGraff.	Yes.	1 year ago.	No.	Bad water.
1	Sept. 6.	Country.	No.	No.	Yes.	Nothing known.
1	" 6.	Near Mt. Gilead.	No.	No.	Yes.	Nothing known.
1	" 6.	Cleves.	No.	No.	No.	Come home sick from Indianapolis.
1	" 6.	North Bend.	Yes.	No, next door	Yes.	Origin of case 1 not known; case 2 probably contracted from No. 1.
1	" 7.	Milford.	No.	No.	Yes.	Use water from well close to 5 privy vaults and 2 stables.
1	" 7.	Near Milford.	No.	No.	No.	Came home sick from Brown county.
1	" 7.	Milford.	No.	No.	Yes.	Bad water.
1	" 7.	Near Potsdam.	No.	No.	Yes.	Disease introduced into neighborhood by patient from Indiana.
1	" 7.	Near Cincinnati.	No.	Not recently.	No.	Nothing known.
1	" 7.	Cardington.	No.	11 mos. ago.	.....	Bad surroundings—stools of case that occurred 11 months ago not properly buried or disinfected.
1	" 8.	Blakeslee.	No.	No.	No.	Nothing known.
1	" 8.	Cardington.	No.	No.	Yes.	.....
1	" 8.	Zanesville.	No.	No.	No.	Broken drain pipe from stable found near house.

TYPHOID-FEVER.

TABLE BASED UPON 225 REPORTS OF TYPHOID-FEVER, SHOWING LOCATION, ORIGIN,
WATER SUPPLY, MEASURES OF PREVENTION, ETC.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected; how.	Physician reporting.
Spring.	Possibly.	Buried carefully.	C. M. Wanzer.
Spring.	Possibly by surface drainage.	By carbolic acid.	C. M. Wanzer.
Open well.	Possibly.	Buried.	C. M. Wanzer.
Well and spring.	Drain close to spring.	Carbolic acid and cop- peras.	W. W. Hamer.
Spring.	No.	Carbolic acid and cop- peras.	W. W. Hamer.
Spring.	Spring one-fourth mile from cemetery, on lower ground.	Buried.	A. A. Nefe.
Ohio river.	.....	Buried at a distance.	W. C. Hughes.
Well.	.....	Corrosive sublimate solution.	W. C. Hughes.
Well.	.....	Buried.	R. C. Belt.
.....	.....	Buried at a distance.	R. C. Belt.
Well.	Yes—near a number of privies.	Buried.	R. C. Belt.
Well.	Yes.	Followed circular of St. Bd. of Health.	S. P. Deahofe.
Driven well.	Think not.	Carbolic acid.	J. D. Daugherty.
Well.	Yes—privy near.	Buried at a distance from house.	Florence R. Smith.
Well.	Drain passes near well —several cases of typho-malarial fe- ver followed in those using water from this well.	Wood-ashes.	G. E. Starner.
Well.	Well but few rods from cemetery.	Buried.	F. R. Smith.
Hydrant.	Not to my knowledge.	Stools removed and vessel kept clean.	J. S. Haldeman.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Sept. 8.	Zanesville.	No.	No.	No.	Wet cellar.
1	" 9.	Cardington.	No.	Don't know.	Yes.	Patient slept in loft over stable.
1	" 10.	Alton Station.	No.	Recently.	No.	A probable exposure—patient washed for man who died of disease.
1	" 10.	Near Alton.	No.	No.	Yes.	Nothing known.
1	" 10.	Near Alton.	No.	No.	Yes.	Spent 2 days in Columbus a week prior to attack.
1	" 11.	Laura.	Yes.	No.	No.	Drank water from suspicious well.
1	" 15.	Wadsworth.	Yes.	Two y'rs ago.	No.	No disinfectants used in cases prior to this.
1	" 15.	Wadsworth.	No.	Mo. ago.	.....	First case brought from Cleveland and was nursed by this patient.
1	" 15.	Wadsworth.	No.	No.	.....	Drank water from wells on premises where fever was one year ago.
2	" 15.	Wadsworth.	No.	Two yr's ago.	No.	No contact with fever patient. Stools of case in house two years ago not disinfected.
1	" 15.	Guilford.	No.	4 y'rs ago.	No.	.....
1	" 15.	Wadsworth.	No.	1 mo. ago.	.....	Disease has occurred frequently in same house in last two years.
1	" 16.	Nr. Fredericktown	No.	No.	Yes.	.....
1	" 16.	Fulton.	No.	Yes.	Yes.	Nursed case of disease which was contracted, I think, from visitor having typho-malarial fever.
1	" 16.	Wharton.	No.	4 yr's ago.	Yes.	Found a foul box sink-hole in yard near house.
1	" 16.	Centerburg.	No.	2 yr's ago.	Yes.	Cellar drain connects with privy, with foul emanations, at times, into house.
1	" 16.	Centerburg.	No.	4 yr's ago.	Yes.	Damp cellar.
1	" 16.	Centerburg.	No.	Yes.	Yes.	Filth of family and town.
1	" 17.	Country.	No.	No.	No.	Just returned from the west.

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—How.	Physician reporting.
Well.	Not to my knowledge.	Bromo-chloralum.	J. S. Haldemen.
Well.	Yes—well is in stable.	Not at first—have since been burned.	F. R. Smith.
Well.	Well near stable.	Treated with copperas and buried.	L. Woodruff.
Well.	No—surroundings are good.	Solution of copperas and buried.	L. Woodruff.
Well.	Hog-wallow less than a rod from well.	Treated with copperas and buried.	L. Woodruff.
Well.	A leakage of drain 40 feet from well.	Copperas solution.	J. P. Brandon.
Spring.	No, but during warm weather occasionally used water from wells.	No.	N. S. Everhard.
Well.	Yes.	No.	N. S. Everhard.
Spring and well.	No.	.....	N. S. Everhard.
Well.	Think not, but possible.	No.	N. S. Everhard.
Well.	Privy near well.	No.	N. S. Everhard.
Well and spring.	Not probable.	No.	N. S. Everhard.
Well.	Yes; privy-vault 40 ft. from well.	Treated with boiling water and buried.	W. W. Pennell.
Well.	Well is 60 feet from privy.	Carbolic acid.	C. C. Dunham.
Dug-well.	Possibly.	Not during first 3 weeks.	Stansell & Biggs.
Well.	No.	Ch. of lime and buried.	W. O. Phillips.
Well.	Questionable.	Chloride of lime.	W. O. Phillips.
Well.	No.	Chloride of lime.	W. O. Phillips.
Well.	No possibility.	Culpably neglected.	G. M. Tate.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Sept. 17.	Country.	No.	3 years ago.	No.	Nothing known.
1	"	Zanesfield.	No.	No.	Yes.	Possibly bad water.
1	" 20.	Miltonsburgh.	No.	No.	No.	Suspect water supply.
1	" 20.	Miltonsburgh.	No.	No.	No.	Drank water from well just mentioned.
3	" 20.	Miltonsburgh.	Yes.	No.	No.	Daughter came home sick. Great carelessness in regard to disinfection. Mother, brother and sister took disease.
1	" 20.	Miltonsburgh.	No.	No.	Yes.	Origin obscure.
1	" 20.	Near Vienna.	No.	No.	No.	.....
1	" 20.	Samantha.	Yes.	Year ago.	No.	Have been at different times over a dozen cases of typhoid-fever in same house.
1	" 20.	In country.	No.	No.	Yes.	.....
1	" 24.	Near DeGraff.	No.	1 mo. ago.	No.	Think it was from bad water.
1	" 25.	Near Mifflin.	No.	.....	Yes.	Mother of patient had had fever, probably typhoid.
1	" 25.	Mifflin.	No.	No.	No.	Washed clothes used by a typhoid-fever patient.
1	" 25.	Vermillion tp.	No.	Don't know.	No.	Nothing known.
1	" 26.	Country.	Yes.	Yes.	Yes.	Nothing known, but this is third case in same house in last two months.
1	" 26.	Rushsylvania.	No.	No.	No.	Recently worked on farm where disease existed.
1	" 26.	Odor.	Yes.	Don't know.	Yes.	Ten cases in village of 50 inhabitants in last 10 weeks.
1	" 26.	Big Spring.	No.	Don't know.	No.	Came here sick from Ridgeway, where disease prevailed.
2	" 26.	Mt. Vernon.	No.	Not lately.	No.	Drinking water apparent cause.
1	" 27.	Marengo.	No.	No.	Yes.	Washed for child that had the disease.
1	" 27.	Near Samantha.	No.	No.	No.	Nothing known—patient traveling over country.

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
Well.	No.	Copperas and carbolic acid.	W. W. Hamer.
Old mill-race.	Yes.	Carbolic acid.	C. M. Wanzer.
Well.	Think it contaminated from privy.	Copperas.	H. L. Rosenberry.
Well.	.....	By burial.	H. L. Rosenberry.
Well.	Possibly from privy.	No—too careless to do so.	H. L. Rosenberry.
Well.	Well 10 feet from bad cellar.	Carbolic acid.	H. L. Rosenberry.
.....	Not far from stable and privy, with ground sloping toward well.	Stools thrown some distance from house.	F. M. Thomas.
Well.	Think not—but well only 8 or 10 feet from house.	No, directed them to be thrown into privy	F. M. Thomas.
Well.	Think not, but well is near house.	Slightly.	Geo. S. Courtright.
Well and spring.	Yes.	Carbolic acid.	W. W. Hamer.
Well.	Well is above house, but excreta deposited promiscuously about the yard.	Stools removed instantly, and vessels disinfected.	C. D. Sackett.
Spring.	No.	Removed at once and buried.	C. D. Sackett.
Spring.	.....	.....	C. D. Sackett.
Dug-well.	Yes.	Copperas.	John Wallace.
Well.	Yes.	Copperas.	John Wallace.
Well.	.....	Copperas.	John Wallace.
.....	About as usual.	Copperas.	John Wallace.
Well.	Well on slope, 80 feet from stable.	No diarrhea.	E. R. Eggleston.
Well.	Think not.	Chloride of lime.	J. W. Pratt.
Well - water at home.	Possibly from privy.	Thrown down steep hill.	F. M. Thomas.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Sept. 27.	Near Broadway.	No.	.....	No.	Patient came from Tennessee five weeks ago, where disease was prevailing; ill ten days prior to return.
1	" 28.	Laura.	Yes.	Yes.	No.	Came here sick from Jaysville, and three children have since taken disease.
1	" 28.	Laura.	No.	Not lately.	Yes.	Visited house where disease was present.
1	" 28.	Wadsworth.	No.	A mo. ago.	No.	Disease occurred in this house a number of times.
1	" 28.	Wadsworth.	No.	No.	No.	Typhoid-fever in adjoining house last year.
1	" 28.	Sharon.	No.	No.	No.	Sewing-girl who had worked at houses where disease was present.
1	" 28.	Montville tp.	No.	No.	No.	Worked in family where disease occurred last yr.
1	" 29.	Samantha.	Yes.	30 yr's ago.	.....	House near filthy made ground; in wet weather cellar and well fill up with back water.
1	" 29.	Country.	No.	No.	Yes.	Had visited patient sick with the disease, and attended her funeral.
1	" 30.	Near Mifflin.	No.	No.	Yes.	Visited at neighbor's who had typhoid fever.
1	" 30.	Centerburg.	No.	No.	Yes.	Low ground—bad water.
2	" 30.	Centerburg.	Yes.	No.	Yes.	Water from well in low swampy ground.
1	" 30.	Independence.	No.	.....	No.	Disease has prevailed in neighborhood every season for last five years.
1	" 30.	Independence.	No.	No.	No.	.....
1	" 30.	Independence.	No.	No.	No.	.....
1	" 30.	Plain City.	No.	No.	No.	Nothing known.
1	" 30.	Fincastle.	No.	No.	Yes.	Came here sick from Russellville.
1	" 30.	Kessler.	No.	No.	Yes.	Worked several places where disease existed.
1	Oct. 1.	Lima.	No.	No.	No.	.....
2	" 1.	New Richmond.	No.	Don't know.	No.	.....
1	" 2.	West Manchester.	No.	No.	No.	Slept in room opening on yard containing two badly smelling privy-vaults.
2	" 2.	Norton tp.	No.	4 yr's rgo.	No.	Patient came to this house from Cleveland with disease; no disinfectants used and three cases followed.

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—How.	Stools disinfected—How.	Physician reporting.
		Carbolic acid.	J. B. Taylor.
		Treated with copperas and buried.	J. P. Brandon.
Well.	Suspicious.	Copperas.	J. P. Brandon.
Well and spring.		No.	N. S. Everhard.
Well.	Yes.	No.	N. S. Everhard.
			N. S. Everhard.
Well.	Yes.	No.	N. S. Everhard.
Well.	Yes.	No.	F. M. Thomas.
Spring.	Think not.	Chloride of lime and buried.	S. N. Alban.
Spring.	Think not.	Chloride of zinc and buried.	C. D. Sackett.
Well.	Think it is.	Chloride of zinc.	W. O. Phillips.
	Yes.	Chloride of zinc.	W. O. Phillips.
Well.	Well close to house; slops thrown near.	Carbolic acid and buried.	I. N. Noland.
Well.	Think not.	With carbolic acid.	I. N. Noland.
Well.	No.	Carbolic acid and chloride of lime.	I. N. Noland.
Well.	Possibly.		F. N. Mattoon.
		Copperas.	
		Copperas.	J. L. Baird.
Well.	No.	No.	Geo. L. Høge.
Well.	Think it is, from kitchen refuse.	Carried away and buried.	W. S. Phillips.
Well.	Think not.	No.	F. C. Estabrook.
Well.	Yes.	No.	N. S. Everhard.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Oct. 4	Country.	No.	No.	Yes.	This case and three other cases in three other families, all used water from a well, I think contaminated by typhoid stools two months ago.
1	" 7	Blakeslee.	No.	Not known.	Yes.	Think it was from drinking water.
1	" 7	Blakeslee.	No.	No.	Yes.	Nothing known.
1	" 11	Newport.	No.	No.	Yes.	Patient was a physician.
1	" 15	Red Oak.	No.	No.	No.	.....
1	" 16	Centerburg.	No.	Year ago.	Yes.	Bad water—disease endemic here.
1	" 18	Oberlin.	No.	No.	No.	.....
1	" 18	Country.	No.	Not for 10 yrs	No.	Came here sick from Ash'd.
1	" 18	Terrace Park.	No.	No.	No.	Patient worked in Cin'ti.
1	" 18	Country.	No.	No.	Yes.	Nothing known.
1	" 18	Country.	No.	No.	No.	Nothing known.
2	" 18	Utica.	No.	No.	Yes.	Case 1 came here from Granville sick with disease. Case 2 contracted from case 1 probably.
1	" 18	Utica.	No.	No.	No.	Visited house containing disease two weeks prior to illness.
1	" 18	Independence.	No.	No.	Yes.	Disease prevails here nearly every year.
1	" 22	Wadsworth.	No.	Yes.	No.	Cases occurred in this house two years ago, and stools were thrown without disinfection on ground near well.
1	" 24	Pleasant Tp.	No.	No.	No.	Traveled about country with threshing machine.
1	" 24	Columbus Grove.	No.	.....	No.	Lately visited case of typhoid-fever.
2	" 26	Five Mile.	No.	Don't know.	Yes.	Both had been nursing a typhoid-fever patient.
2	" 28	Utica.	No.	4 years ago.	Yes.	Visited typhoid patient near his house.
1	" 28	North Liberty.	No.	No.	No.	Nothing known.
2	" 29	Columbus.	No.	No.	Yes.	.....
2	" 29	Bloomville.	No.	No.	Yes.	.....
2	" 29	Madisonville.	No.	No.	No.	.....
1	" 29	Madisonville.	No.	No.	No.	.....
1	" 30	Jerusalem.	No.	No.	Yes.	Used bad drinking water.
1	" 30	Near W. Middle'g.	No.	No.	Yes.	.....
1	" 30	Bellefontaine.	Yes.	Yes.	Yes.	.....

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
.....	.....	Not as they should have been.	E. M. Gaston.
Well.	Kitchen slops drain into well.	Wood ashes.	G. E. Starner.
Well.	No, driv'n well, 65 ft. dp.	Chloride of lime.	G. E. Starner.
Well.	Think not.	No.	E. M. Gaston.
Spring.	Think not.	No.	J. M. Salisbury.
Driven well.	Think not.	Chloride of zinc.	W. O. Phillips.
Well.	Possibly contam'd from neighboring cess-pool.	Chloride of zink and buried.	Julia C. Jump.
.....	Drank bad water in Ashland.	Chloride of lime.	C. D. Sackett.
Cistern.	No.	Buried 30 yds. from house.	R. C. Belt.
Spring.	No, but freq'tly drank water away from home.	No, thrown away from house.	R. B. Woodward.
Well and spring.	Water low.	No.	R. B. Woodward.
Well.	Think not, but well near dwelling.	Dry earth.	G. W. Garrison.
Well.	Well is near dwelling.	Dry earth.	G. W. Garrison.
Well.	No.	Carbolic acid & buried.	I. N. Noland.
Well.	Yes.	No.	N. S. Everhard.
Well when at home.	Privy and barn within 50 feet of well.	With copperas.	Joseph Morris.
Well.	Yes.	With copperas.	Joseph Morris.
Well.	No.	Carried from premises.	S. B. Sheldon.
Well.	Well close to kitchen door.	Sulphate of copper.	A. E. Smith.
Well.	No.	Boil'g water & car'b acid	W. W. Pennell.
Well.	Yes, from privy vault.	Lime & carbolic acid.	Frank Warner.
Cistern.	Cont'd by surface water.	Corrosive sublimate.	A. M. Martin & Son.
Well.	Yes.	Buried immediately.	J. O. Marsh.
Cistern.	No.	Burned immediately.	J. O. Marsh.
Creek.	Yes.	Treated with lime and buried.	C. M. Wanzer.
Driven well.	Think not.	Carbolic acid.	C. M. Wanzer.
Well.	Yes.	By acids.	C. M. Wanzer.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Oct. 31	Near Jerusalem.	No.	No.	Yes.	.....
1	" 31	Five Mile.	No.	Don't know.	Yes.	Nothing known.
2	Nov. 3.	Near Russel.	No.	No.	Yes.	These cases, brother and sister, nursed wife of brother who had the fever.
1	" 3.	Near Delta.	No.	No.	No.	Probably from impure water.
1	" 3.	Delta.	No.	No.	Yes.	Attribute it to bad drinking water.
1	" 3.	Fredericksburg.	No.	No.	No.	Possibly bad water.
2	" 4.	Fredericksburg.	No.	5 yrs. ago.	No.	Bad water.
1	" 4.	Near Fredericks'g.	No.	No.	No.	.....
1	" 4.	Near Hamler.	No.	No.	Yes.	.....
1	" 4.	Austinburg.	No.	Don't know.	No.	Possibly from bad water.
1	" 4.	Mt. Vernon.	No.	No.	No.	Possibly from bad water.
1	" 4.	Carey.	No.	No.	No.	Patient brought here sick from Marion.
1	" 4.	Clarksville.	Yes.	Don't know.	Don't know.	Two cases died recently in this same house.
2	" 4.	Country.	No.	Yes.	.....	This is third case in same house.
1	" 4.	Manchester.	No.	No.	Yes.	Two cases occurred recently in house on hill just above.
1	" 4.	Blanchester.	No.	No.	Yes.	Possibly from old well in school yard.
1	" 4.	Mechanicsburg.	No.	No.	No.	Origin unknown; 7 cases in town in last 10 weeks.
1	" 4.	Rosedale.	No.	Not lately.	Yes.	Unknown.
1	" 4.	Rosedale.	No.	Not lately.	Yes.	Had been from home and returned sick.
2	" 5.	Allentown.	No.	Don't know.	Yes.	Contaminated water supply.
1	" 5.	Eagleport.	No.	Year ago.	Yes.	Patient a physician, but had not attended typhoid patient for month past.
1	" 7.	Woodstock.	No.	No.	Yes.	Nothing known, but ground-water near surface and privies generally very foul.
1	" 7.	Country.	No.	No.	No.	Nothing known.
1	" 7.	Nr. Bloom Centre.	No.	Year ago.	No.	Think it came from previous case and pollution of well.
1	" 7.	Country.	.....	Don't know.	Yes.	Nothing known.

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
Spring.	Yes.	Buried under ashes.	C. M. Wanzer.
Well.	No.	No.	S. E. Sheldon.
Well.	No.	Lime and carbolic acid.	F. M. Granger.
Well.	Near house, by surface water.	With copperas.	S. P. Bishop.
Well.	Yes, from privy and stable.	.....	.....
Spring.	Cemetery $\frac{1}{4}$ mile from & 100 ft. below spring.	Corrosive sublimate.	E. E. Ash.
Well.	Yes.	Corrosive sublimate.	E. E. Ash.
Spring-run.	Yes.	Corrosive sublimate.	E. E. Ash.
Shallow well.	Yes.	Chloride of lime.	C. M. Thompson.
Well.	Well under kitchen; slops thrown by door.	Buried immediately.	W. O. Ellsworth.
Driven well.	Probably so.	Buried at once.	E. R. Eggleston.
.....	.....	Copperas.	F. W. Brayton.
Well.	Yes, by surface drainage.	No, thrown carelessly about.	Lyman Watkins.
Well.	Yes.	Buried immediately.	J. N. Beach.
Well.	Possibly by water from hill above.	No, carried far away.	Lyman Watkins.
Cistern.	No.	Mixed with sawdust and burnt.	Lyman Watkins.
Well.	No.	Chloride of lime.	John H. Clark.
Well.	No.	Chloride of lime.	John H. Clark.
Well.	No.	Chloride of lime.	John H. Clark.
Well.	Yes.	Carried out immediately.	Mason & Marchant.
Driven well.	Privy vault, 40 ft. from well.	Chloride of lime.	J. B. Humphrey.
Well.	Think not.	Quick lime and carbolic acid.	W. J. Green.
Well.	Think not.	Carbolic acid and quick lime.	W. J. Green.
Well.	Yes.	No, carried to a distance.	Wm. McHouseman.
Well.	No.	Thrown on ground at distance from well.	W. M. McHouseman.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Nov. 7.	Fulton.	No.	.....	.....	Suppose disease contracted while nursing sister in Cardington.
1	" 7.	Crestline.	No.	No.	Yes.	Think it was from use of bad water.
1	" 8.	Country.	No.	Don't know.	No.	Possibly contracted disease in Hillsboro.
2	" 8.	New Petersburg.	No.	Don't know.	No.	Extreme drought—water very low in wells.
2	" 9.	Fostoria.	No.	No.	Yes.	Nothing known.
1	" 11.	Red Oak.	No.	No.	No.	Case was first called typho-malarial fever; had nearly recovered, but relapsed with genuine typhoid-fever.
1	" 11.	Country.	Yes.	No.	Yes.	Family neighborly with family in which disease existed.
1	" 11.	Manchester.	No.	No.	Yes.	Came from Cincinnati a week prior to illness; disease was prevailing there.
1	" 11.	Manchester.	No.	No.	Yes.	Frequent visitor at Cincinnati, where disease prevailed.
1	" 16.	Near Westboro.	No.	No.	Yes.	Came from Cincinnati sick with fever.
1	" 17.	Wyoming.	No.	Yes.	Yes.	Origin unknown—this patient had typhoid-fever five years ago.
1	" 17.	Wyoming.	No.	No.	No.	Disease contracted in Cincinnati.
1	" 18.	Country.	No.	No.	No.	Nothing known.
1	" 18.	Milford.	No.	No.	Yes.	.....
1	" 18.	Bedford.	Yes.	Yes.	2 mos ago.	Goes to Cleveland weekly; disease may have been contracted there.
1	" 19.	Rio Grande.	No.	2 mos. ago.	Yes.	Sister of this patient contracted disease two months ago by washing infected clothing.
1	" 19.	Near Rio Grande.	No.	No.	Yes.	Patient attended school where others went that had disease a year ago—disease also present in two houses near school house.
1	" 19.	Milford.	No.	No.	Yes.	.....

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
Well.	Yes.	Carbolic acid, 10 per cent. sol.	C. C. Dunham.
Well.	Think not.	Carbolic acid.	G. R. Edwards.
Well.	Yes.	Buried at distance from well.	Rufus A. Dwyer.
Well.	Yes, from privies.	Buried at distance from well.	Rufus A. Dwyer.
Shallow well.	Possibly from privy vault.	No.	Geo. L. Hoege.
Well.	No.	Buried at once.	J. N. Salisbury.
Spring.	Think not.	No.	J. W. Guthrie.
Public well when home.	No.	No.	J. W. Guthrie.
Cistern.	No.	Yes, with lime.	J. W. Guthrie.
.....	.....	Lime.	A. F. Deniston.
Driven well.	Think not, but sink drain runs within few feet of well.	Labaraque's solution and then burned.	C. P. Hart.
Ohio river.	Yes.	Labaraque's solution and then burned.	C. P. Hart.
Well.	No.	No.	A. W. Mitchell.
Well.	Several privies near well.	Buried.	R. C. Belt.
Well.	No.	Strong carbolic acid.	R. S. Hubbard.
Well.	Well is little below school-house privy; four cases 1 year ago among the scholars.	Buried, and vessel immediately scalded.	R. D. Jacobs.
Spring.	Think not.	Buried, and vessel immediately scalded.	R. D. Jacobs.
Hydrant and well	Hydrant water used in Cincinnati; well not polluted.	Buried.	R. C. Belt.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Nov. 19	Ne'r Col'mb's Gr'Ve	No.	No.	No.	Boarded at house where fever existed.
1	" 19	Rosedale.	No.	No.	No.	Came home sick with disease.
1	" 21	Jefferson Tp.	No.	Yes, recently.	Yes.	Think it contracted by associating with another case of typhoid-fever.
1	" 24	Near Waterford.	No.	No.	Yes.	Contracted disease in Nebraska.
1	" 25	Utica.	Yes.	Yes.	No.	Probably contracted from former cases in same house.
1	" ...	Zanesfield.	No.	.....	Yes.	Brought here sick from Marion.
1	" 25	Near Potsdam.	No.	No.	No.	Nothing known.
1	" 27	Quincy.	Yes.	4 years ago.	No.	Probably from bad water.
1	" 27	Madisonville.	No.	No.	Yes.	Patient doubtless contracted disease in Cincinnati where it prevailed.
1	" 29	Centerburg.	No.	6 years ago,	Yes.	.....
1	Dec. 1	Russellville.	No.	5 mont's ago.	No.	Possibly contracted from brother, sick two months' previous.
1	" 1	Country.	No.	4 mont's ago.	No.	Four cases in same house few months' previous, and disinfect'n not practiced.
1	" 2	Milford.	No.	No.	Yes.	Probably contracted from sister who had the fever a few months' previously.
1	" 2	Jefferson Tp.	No.	No.	Yes.	Other cases on same farm; no known connection.
1	" 2	Sekitan.	No.	No.	No.	Possibly from infected water supply.
1	" 2	Madisonville.	No.	Yes.	Yes.	Patient worked in Cincinnati where disease prevailed.
1	" 2	Kessler.	No.	No.	Yes.	Taken sick two or three days after visiting an uncle where there were two or three cases of fever.
1	" 2	Mowrytown.	No.	No.	No.	Possibly from bad water.
1	" 3	Near Rainsboro.	No.	No.	No.	Possibly from bad water.
1	" 3	Madisonville.	No.	No.	Yes.	Contracted disease in Cincinnati.
1	" 5	Farmer.	No.	No.	No.	Think it was caused by bad drinking water.
1	" 5	Center Tp.	No.	No.	No.	Came here sick from a distance.
1	" 5	Country.	No.	No.	Yes.	Nothing known.

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
Well.	Don't know as to where she boarded.	Copperas.	Joseph Morris.
Well.	.....	Chloride of lime.	John H. Clark.
Well.	Not more than ordinary liability.	No, but buried remote from water supply.	John N. Beach.
.....	.....	Boil'g w'ter, carb. acid and buried.	W. W. Pennell.
Well.	Yes, close to kitch'n d'or.	With sulph. of copper. Lime.	A. E. Smith.
.....	.....	Destroyed.	C. M. Wanzer.
Well.	No.	Carbol. acid, corro. sub.	S. P. Deahofe.
Well.	Yes, by stable & privy.	Chloride of lime.	M. V. Speece.
.....	.....	Chloride of zinc.	G. L. Krieger.
Shallow well.	Not to my knowledge.	No.	W. O. Phillips.
Well.	Probably; shallow well and water low.	Hot water.	J. N. Salisbury.
Well.	Yes, from privy; water also very low.	Stools buried.	H. L. Rosenberry.
Well and cistern.	Well was contaminated from privy.	No.	R. C. Belt.
Well.	No.		J. N. Beach.
Ohio River.	Yes, water taken 12 miles below Cin'ti.	Corrosive sublimate.	W. C. Hughes.
Ciste'n & Ohio R.	Yes, river water is.	Stools buried.	J. O. Marsh.
Well.	No.	Copperas.	W. J. Kessler.
Spring.	Yes, from surface drainage.	Copperas.	J. L. Baird.
Well.	Well under kitchen; surroundings bad.	Platt's chlorides.	D. N. McBride.
Ohio River.	Yes.	Strong sol. chlor. zinc.	W. G. Hier.
Well.	Yes, well in barnyard, near privy vault.	Chloride of zinc.	B. E. Miller.
Well.	.....	Chloride of zinc.	B. E. Miller.
Cistern.	No.	Yes.	F. H. Williams.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	1887. Dec. ...	Salem Tp.	No.	Don't know.	No.	Contracted at county* infirmary, where disease is, and has been, all fall.
1	" 10	Bowling Green.	No.	No.	Yes.	About fifty cases in village during 3 months previous.
1	" 10	Country.	No.	No.	Have been.	Nothing known.
1	" 10	Near Senecaville.	No.	No.	Yes.	Water used by family was low and bad.
1	" 10	Rio Grande.	No.	No.	Has been.	Patient lived near and went to school attended by several having had typhoid-fever.
1	" 13	Wadsworth.	No.	.....	.....	Contracted disease while attending his brother in Decatur, Ala.
2	" 14	Near Clearport.	No.	No.	Yes.	Think both cases contracted from nursing typhoid-fever patients.
1	" 16	Near Mercerville.	No.	No.	No.	Patient contracted disease in Huntington, W. Va., where disease was prevailing.
1	" 17	Piqua.	No.	No.	Yes.	Case next door—families intermingle.
1	" 23	Country.	No.	2 years ago.	Yes.	Nothing known — have been four cases in this house.
1	" 24	Dixon.	Yes.	No.	Yes.	House on side-hill, with drainage into well from privies above; had been 30 or 40 cases in village.
1	" ...	Country.	No.	Recently.	Yes.	Contracted disease while nursing her mother.
1	" ...	Near W. Liberty.	No.	No.	No.	Nothing known.
1	" 25	Near Mech'burg.	No.	No.	.....	Nothing known.
1	" 26	Canaan Tp.	No.	No.	Yes.	.....
1	" 26	Bucyrus.	No.	No.	Yes.	Possibly from association with mild case.
1	" 28	Country.	No.	No.	No.	.....
1	" 29	Martin's Ferry.	No.	No.	No.	Boarded in house in which man was sick with typhoid-fever.
1	" 30	Guyan Tp.	No.	No.	Yes.	Case in another family using same water.
1	" 30	Guyan Tp.	No.	No.	Yes.	Supposed to be from drinking water.
1	1888. Jan. 5	Near U. San'd'ky.	No.	No.	Yes.	Nothing known.

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
Well.	Think not.	Ordered disinfected and buried.	F. W. Brayton.
Well.	Yes.	No.	W. M. Tuller.
Driven well.	No.	Treated with boiling water and buried.	W. W. Pennell.
Well.	Yes.	No.	A. R. Cain.
Well.	Think not.	Chloride of lime and buried.	R. D. Jacobs.
.....	.....	Sulphate of iron.	N. S. Everhard.
Well.	Think not, though well is near house.	Corrosive sublimate.	J. T. Huffrod.
.....	.....	No — cleanliness observed.	S. W. Williams.
Well.	No.	No.	S. S. Gray.
Cistern.	No.	Corrosive sublimate.	I. N. Bowman.
Well.	Yes — all our wells badly polluted.	Yes—by rules of St. B'd of Health.	P. A. Gordon.
Well.	Think not, but water was very low.	Copperas.	Ambrose Ogan.
Well.	Yes.	Yes—with acids.	C. M. Wanzer.
Deep well.	No.	Chloride of lime.	J. H. Clark.
Well.	No.	Buried remote from well.	J. N. Beach.
Well.	Think it likely.	Sulphuric acid.	J. B. Kreider.
Well.	Think not; near house.	No.	Ambrose Ogan.
Hydrant.	Used water from hydrant while working in Pittsburgh.	Carbolic acid.	B. O. Williams.
Spring.	Possibly by slops and fecal discharges.	No.	S. Williams.
Spring.	Yes.	.....	S. W. Williams.
Driven well.	No.	Corrosive sublimate.	I. N. Bowman.

TYPHOID-FEVER—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	1888 Jan. 6	Glendale.	No.	No.	.....	Patient does business in Cincinnati, where disease prevails.
1	" 6	Glendale.	No.	No.	Yes.	Is employed on passenger train.
1	" 7	Country.	No.	8 weeks ago.	No.	Contracted from brother who had disease.
1	" 7	Nr. Rushsylvania.	No.	No.	Yes.	Nothing known.
1	" 7	Nr. Rushsylvania.	No.	No.	Yes.	.....
1	" 7	Madisonville.	No.	No.	No.	Patient works in Cincinnati where disease prevailed.
1	" 7	Colerain tp.	No.	No.	Not now.	Had been visiting in Cincinnati.
1	" 8	Utica.	No.	3, lately.	No.	Probably contracted from previous cases.
1	" 10	Country.	Yes.	No.	No.	Think it due to bad drinking water.
1	" 12	Ash Ridge.	Yes.	No.	No.	Probably from polluted water.
1	" 13	Marion.	No.	.....	.....	Bad water supply.
1	" 13	Lyndon Station.	Yes.	Yes.	No.	Four other cases in same house.
4	" 14	Kessler.	.....	.....	.....	Cases 1 and 2, sisters, were visiting grand-parents, who had typhoid fever; the well at this place was grossly polluted. Cases 3 and 4 were servants in house of grand-parents.
1	" 14	Madisonville.	Yes.	3 mo's ago.	Yes.	.....
1	" 16	Shreve.	No.	No.	Yes.	.....
1	" 16	Shreve.	No.	10 yr. ago.	Yes.	.....
1	" 16	Country.	Yes.	Yes.	Yes.	Origin not known; two children of case 1 subsequently affected.
1	Feb. 6.	Madisonville.	No.	No.	Yes.	.....
1	" 7	Rio Grande.	No.	4 mo's ago.	No.	Patient attended school in which 11 cases have occurred in last 18 mo's.
1	" 9	Russell.	No.	10 yrs. ago.	No.	Think it from water from polluted well.
1	" 10	Country.	Yes.	3 mo's ago.	Yes.	.....
1	" 18	Martin's Ferry.	No.	No.	Yes.	Nothing known.

TYPHOID-FEVER—Continued.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
Ohio River.	Yes.	Emptied into water-closet, which is disinfected with solution of carbolic acid.	R. D. Mussey.
Ohio and Miami Rivers.	Yes.	Emptied into a closet; disinfected with carbolic acid.	R. D. Mussey.
Well.	No.	Copperas.	Jos. Morris.
Well.	Don't know; water very low.	Copperas and heat.	Jno. Wallace.
Spring.	May be; ceased to flow during dry weather.	Copperas and heat.	Jno. Wallace.
Ohio River.	Yes.	Immediately buried.	J. O. Marsh.
Ohio River.	Yes.	Corrosive sublimate.	R. P. Joyce.
Well.	Yes.	Sulphate of copper.	A. E. Smith.
Spring.	Yes.	Chloride of zinc.	J. W. Weber.
Well.	Well nr. house; drainage towards well.	No.	J. N. Salisbury.
Well.	Privy-vault and stable within 30 ft. of well.	Corrosive sublimate.	Auguste Rhu.
Well.	Water very foul.	No; and left in house.	W. E. Pricer.
Well.	Yes, as already given.	Chloride of lime and copperas.	W. H. Kessler.
Well and cistern.	Yes.	Stools received in cloths and burnt.	J. O. Marsh.
Two wells.	Not positively known.	Copperas, carbolic acid and buried.	W. S. Battles.
Two or three wells.	Possibly, from privy vaults.	.....	W. S. Battles.
Cistern.	Think not.	With corrosive sublimate.	F. H. Williams.
Cistern and Ohio River.	Cistern is not; Ohio river is.	Treated with copperas and buried.	J. O. Marsh.
Well and cistern.	Well at school-house; cistern at home; no cont'min't'n known.	With chloride of lime and buried.	R. D. Jacobs.
.....	.....	Chloride of lime.	F. M. Granger.
Well.	No.	Copperas.	Ambrose Ogan.
Different sources.	Well at home c'nt'mi'ed	Carbolic acid.	B. O. Williams.

TYPHOID-FEVER—Concluded.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Feb. 17	Dallas.	No.	No.	No.	.....
1	" 17	Country.	No.	Don't know.	No.	.....
2	Mar. 4	Troy.	No.	Recently.	Yes.	Nothing known.
2	" 4	Troy.	No.	No.	No.	.....
2	" 6	Near Clearport.	No.	No.	No.	Case 1 had recently nursed typhoid-fever patient.
1	" 8	Country.	Yes.	7 years ago.	No.	This case probably contracted from previous case in same house.
1	" 8	Kessler.	No.	Recently.	Yes.	.....
1	" 10	Near Blakeslee.	No.	No.	No.	.....
1	" 10	Jefferson tp.	No.	No.	No.	Brakeman on train, drank water from Ohio river.

The reports included in the above table may be briefly summarized as follows:

LOCATION.

Seventy of the reports locate the disease in the country; the majority of the other cases were in the small country villages. It should be stated, however, that most of our correspondents are located in villages.

FACTS BEARING UPON THE ORIGIN.

Twenty-five reports state other cases of the disease to have been present in the same house at the same time.

Sixty reports state the disease to have occurred in the same house at some time prior to the case reported.

Sixteen can obtain no information in regard to the latter question.

Forty-two attribute the disease to the water drunk.

Forty-five to direct exposure either by nursing, visiting or living in the house with a typhoid-fever patient.

TYPHOID-FEVER—Concluded.

Source of drinking water.	Drinking water contaminated—Source.	Stools disinfected—how.	Physician reporting.
Well.	No.	No; no diarrhoea.	R. L. Sonder.
Well.	Think not.	Carbolized water.	G. E. Starner.
Well.	Possibly—well under back porch.	Yes, at present; first were not.	J. W. Means.
Well.	Think not.	No.	J. W. Means.
Well.	Think not.	Yes—corrosive sublimate.	W. S. Rutter.
Well.	No.	Chloride of lime placed in vessel.	E. G. Burton.
Well.	No.	Copperas.	
Driven well.	No.	Calbolized water.	W. H. Kessler.
.....	.....	No.	G. E. Starner.
		No—carried to a distance.	J. N. Beach.

Three cases are reported as having been contracted by washing infected clothing.

WATER SUPPLY.

One hundred and forty-nine report wells to have been the source of water supply; eighteen springs, six wells and springs, eleven cisterns, and thirteen the Ohio river. Other reports give no answer to this question.

POLLUTION.

Ninety-two state that the water was certainly, or in all probability, polluted.

DISINFECTION.

Ninety state that the stools of their patients were not disinfected; of this number, twenty-three had the stools buried.

Of the disinfectants used, thirty used copperas, twenty-two carbolic acid, nineteen chloride of lime, seventeen corrosive sublimate, ten chloride of zinc, five burning, five boiling water, four lime, three sulphate of copper, one Platt's chlorides, and one sulphuric acid.

DIPHTHERIA.

TABLE BASED UPON 211 REPORTS OF DIPHTHERIA, SHOWING LOCATION, ORIGIN, SANITARY CONDITION AND MEASURES OF PREVENTION.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
	1787					
1	Sept. 3	Near Milnersville.	No.	No.	No.	Sporadic case apparently.
1	" 6	In country.	No.	Yes.	No.	Origin not known.
1	" 7	Milford.	No.	2 years ago.	No.	No known exposure.
2	" 12	Waverly.	Yes.	No.	Yes.	No exposure to other cases.
1	" —	In country.	No.	No.	.....	No exposure known of.
1	" 16	Dague.	No.	No.	No.	No exposure.
1	" 17	Van Buren Tp.	No.	No.	No.	Followed parturition.
2	" 18	Near Cynthiana.	Yes.	No.	No.	No known exposure.
4	" —	Near Cynthiana.	Yes.	No.	No.	No exposure.
1	" 19	Zanesville.	No.	2 years ago.	Yes.	No known exposure.
1	" 19	Belle Centre.	No.	10 mon's ago.	Yes.	No exposure.
1	" 20	Near Lithopolis.	No.	No.	No.	Origin unknown.
1	" 24	Logansville.	.....	1 year ago.	Yes.	.....
1	" 26	Near St. Mary's.	No.	No.	Yes.	Origin unknown.
1	" 26	Near Conant.	No.	4 years ago.	Yes.	First case in neighborhood; origin not known.
2	" 26	Near Conant,	Yes.	No.	Yes.	Both from direct exposure.
1	" 26	Near Conant.	No.	No.	Yes.	Direct exposure.
1	" 26	Near Spencerville.	No.	No.	No.	No known exposure.
1	" 26	Near Mifflin.	No.	Yes.	No.	Disease frequent in family.
1	" 26	Mifflin.	No.	No.	No.	Man, wife and child had diphtheria 10 years ago.
1	" 26	In country.	No.	Yes.	Yes.	Five members of same family had disease two months ago.
1	" 30	Independence.	No.	No.	No.	Came home sick from Cleveland, where family lost three children just previous.
1	" 30	Milford.	No.	2 years ago.	No.	No known exposure.
1	Oct. 2	Near Castine.	No.	No.	Yes.	No known exposure.
2	" 4	Union Plains P.O.	Yes.	Don't know.	Yes.	No known exposure.
2	" 4	Nr. U. Plains P.O.	No.	No.	Yes.	No known exposure.
1	" 7	Franklin Tp.	No.	2 years ago.	No.	No known exposure.
1	" 8	Russellville.	No.	No.	No.	No known exposure.
1	" 8	Castine.	No.	No.	Yes.	Possible exposure at school.
1	" 10	Castine.	No.	No.	Yes.	Direct exposure.

DIPHThERIA.

TABLE BASED UPON 211 REPORTS OF DIPHTHERIA, SHOWING LOCATION, ORIGIN, SANITARY CONDITION AND MEASURES OF PREVENTION.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
Not good. Pretty good. Hog-pens & privy vaults near house. Very good.	Nothing done. Isolation & disinfection. Isolation. Isolation.	Case relapsed. No other cases. Good so far. One other member of family took it. Good.	W. B. Rosamond. W. B. Rosamond. R. C. Belt. Austin Hutt.
Not good. Not good. Filthy. Good. Good, house new. Good. Rather bad Good. Not first class. Good. Stagnant river near.	Disinfectants. No measures taken. Isolation. Disinfectants. Disinfectants. Isolation & disinfection. Isolation. Isolation. Disinfectants. Disinfection.	..... No other cases. Good. Good. Fairly good. No other cases. Good so far. Good so far.	J. W. Little. C. W. Gordon. A. Scheibenzuber. J. W. Little. J. W. Little. J. S. Haldeman. W. S. Phillips. Geo. S. Courtright. W. W. Hamer. J. R. Welch. J. R. Welch.
Good. Good. Good. Good, house in narrow valley. New house, 40 rods from swamp. Well in low ground receives drainage from house and barnyard. Good.	Disinfection. Disinfectants. Disinfectants. Isolation, cleanliness, fumigation. Isolation. No measures taken. Isolation, disinfection, private funeral.	Good. Good. Good. Good. No other cases near. No cases from this.	J. R. Welch. J. R. Welch. J. R. Welch. C. D. Sackett. C. D. Sackett. A. A. Nefe. I. N. Noland.
Poor. Better than most farm houses. Only tolerably good.	Isolation, disinfection. Isolation, disinfection, but public funeral. Isolation & disinfection.	No other cases. One case from this. Good so far.	R. C. Belt. O. B. Longanecker. S. P. Sheldon.
Very bad.	Isolation & disinfection.	Good so far.	S. P. Sheldon.
Not good; low & wet. Mill-pond, 10 rods from house. Good.	None. None whatever. Isolation & disinfection.	No other cases. No cases followed.	Jas. Salisbury. J. N. Salisbury. O. B. Longanecker.
Good.	Isolation & disinfection.	Good.	O. B. Longanecker.

DIPHTHERIA—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
2	Oct. 11	In country.	Yes.	No.	Yes.	Contracted at school from convalescents wearing clothing not disinfected.
5	" 11	In country.	Yes.	No.	.....	Exposure at school.
1	" 12	Russellville.	No.	Yes.	No.	No known exposure.
1	" 18	Somerset.	No.	No.	Yes.	Nothing known.
1	" 18	Somerset.	Yes.	Yes.	Yes.	Origin unknown.
1	" 18	Waverly.	No.	Year ago.	No.	Child wore dress worn by brother who died of diphtheria a year ago; dress had been washed, but not boiled; child taken sick two weeks after dress was first put on.
1	" 18	Ross.	No.	No.	Yes.	Patient measured lady for a dress who had recently recovered from diphth'a.
1	" 20	Castine.	No.	No.	Yes.	No known exposure.
1	" 26	Near Senecaville.	No.	No.	No.	Malig't diphtheria in this neighborhood a year ago.
1	" 27	E. Palestine.	No.	No.	No.	Probable exposure.
1	" 27	Harbor.	No.	No.	No.	Nothing known.
1	" 27	Harbor.	No.	Don't know.	No.	No known exposure.
1	" 27	Harbor.	No.	No.	No.	No known exposure.
1	" 27	E. Palestine.	No.	Year ago.	Yes.	Mother visited case of diphtheria.
2	" 27	E. Palestine.	Yes.	No.	Yes.	Origin not known; public funerals.
1	" 28	Union Plains.	No.	No.	No.	Probably contracted at school.
1	" 28	Castine.	No.	No.	Yes.	Was with a child who had diphtheria two days after.
1	" 28	Hunt's Station.	Yes.	Don't know.	Yes.	No history of exposure.
1	" 28	Near Senecaville.	Yes.	No.	Yes.	Case occurred near where a fatal outbreak occurred 11 months' ago.
1	" 28	Liberty Tp.	No.	No.	Yes.	No exposure known.
2	" 28	Liberty Tp.	Yes.	No.	Yes.	Visited diphtheria patient.
1	" 28	Garrettsville.	No.	No.	Yes.	Origin unknown, but disease first introduced by patient from Cleveland.
1	" 29	Columbus.	No.	No.	.....	Exposed at school.
1	" 31	Fostoria.	No.	Not known.	No.	Origin unknown.
1	Nov. 1	In country.	No.	No.	Yes.	No exposure known.
2	" 4	Cuyahoga Falls.	Yes.	Not known.	No.	Man and wife; no exposure known.

DIPHTHERIA—Continued.

Sanitary conditions of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporti'g.
Fairly good.	Isolation.	Perfect success.	J. E. F. Horne.
Fairly good.	No isolation, all affected at once.	.....	J. E. F. Horne.
.....	None taken.	.....	J. N. Salisbury.
Good.	None.	.....	R. B. Woodward.
Good.	None; mild case.	.....	R. B. Woodward.
Fair.	Isolation.	No other cases.	Austin Hutt.
Good.	Isolation, disinfection, quarantine.	No cases from this one.	C. C. Hoover.
Moderately good.	Isolation, disinfection.	No cases from this one.	O. B. Longanecker.
Good.	Quarantine.	No other cases.	A. R. Cain.
Not g'd; low, wet grd.	Isolation & disinfection.	No further cases.	A. S. McCaskey.
Hotel, garbage carelessly disposed of.	None.	No further cases yet.	H. N. Kinnear.
House go'd; w'rks at mrkt which was bd.	None.	No new cases.	H. N. Kinnear.
Bad.	None.	.....	H. N. Kinnear.
Bad; low, swampy ground.	Isolation, disinfect'n, but public funeral.	No other in this h'se.	A. S. McCaskey.
Bad; privy 25 feet from house.	Isolati'n, disinfect'n, private funeral.	Other childr'n in family did not have it.	A. S. McCaskey.
Bad; family destit'e.	Disinfectants.	No oth'r c'ses in f'm'y.	S. P. Sheldon.
Moder'ly good; cook in basement.	No isolation; boiling water.	.....	O. B. Longanecker.
Fairly good.	None.	.....	A. E. Smith.
Good.	Prohibited neighbor'd visiting.	.....	A. R. Cain.
Water used from spri'g bel'w house.	Isolat'n, disinfect'n, improved surroundings.	Good.	C. K. Andrews.
Good.	Isolation, disinfection.	Successful.	C. K. Andrews.
Not good.	Isolation, fumigation.	No spread from this case.	L. L. Johnson.
Good.	Kept pat'nt in room with family and others out.	No spread of disease.	Frank Warner.
Good.	Isolation, disinfection.	Good.	Geo. L. Hoege.
Bad; barn, pig-pen close to w't'r's'pply.	Incomplete isolation.	Two others in family had it.	H. L. Rosenbery.
Not good.	None.	3 children in family, all escaped.	W. S. Hough.

DIPHTHERIA—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin of disease.
			At present.	Prior to this case.		
1	1887. Nov. 4	Near No. Creek.	No.	Yes.	No.	Same child had disease last August.
1	" 4	Hiram.	No.	2 years ago.	Yes.	Origin unknown.
1	" 4	Hiram.	No.	3 or 4 years ago.	Yes.	Case near by—exposure not known.
1	" 4	Hiram.	No.	No.	No.	Direct exposure seven d'ys before attack.
1	" 4	Near Pataskala.	No.	3 or 4 years ago.	No.	Visited a child with sore throat, nature of which unknown.
2	" 4	Near Alexandria.	Yes.	Year ago.	No.	No known exposure.
1	" 5	Farmer.	No.	10 mo's ago.	No.	Exposure not known.
1	" 16	Near Westboro.	No.	9 years ago.	Yes.	Think condition of house the cause.
1	" 16	Near Westboro.	Yes.	Think not.	Not near.	No known exposure.
1	" 17	In country.	No.	6 and 8 years ago.	Yes.	No known exposure.
1	" 17	In country.	No.	4 years ago.	Yes.	No known exposure.
1	" 17	Wyoming.	No.	Year ago.	Yes.	Attended funeral of child which died of diphtheria.
1	" 17	Wyoming.	No.	No.	Yes.	Attended funeral of relative that died of diphtheria.
1	" 19	In country.	No.	Yes.	Yes.	Mild case in house just previous, origin of w'ch unknown.
1	" 19	Harbor.	No.	No.	Yes.	Origin unknown; brakesman on passenger train.
2	" 18	Garrettsville.	Yes.	Yes.	No.	Direct exposure.
1	" ...	De Graff.	No.	No.	No.	No known exposure.
1	" ...	De Graff.	No.	Year ago.	Yes.	Kitchen slops thrown near back door.
1	" 19	Farmer.	No.	No.	No.	Played with child having membranous croup four days prior to illness.
1	" 19	Madisonville.	No.	No.	No.	Origin unknown; boy w'ks in Cincinnati depot.
1	" 19	Wyoming.	No.	No.	Yes.	No known exposure.

DIPHTHERIA—Continued.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
Bad.	Advised isolation and cleanliness.	No spread of disease.	J. A. Bowdle.
Very filthy in and around house.	Sulphur fumigation.	No spread so far.	C. F. Dyson.
Excellent.	None; no children in family.	No cases from this so far.	C. F. Dyson.
Medium.	Sulphur fumigation.	Good as yet.	C. F. Dyson.
Very fair.	Disinfection.	No other cases.	D. Williams.
Bad; very dirty family.	Disinfection and by thorough cleaning of house.	4 other children in family escaped.	D. Williams.
Fair—farm house.	Principally disinfection.	.....	A. N. Sager.
Bad; house old, decayed and damp.	Isolation, disinfection by bromo-chloralum and sulphur.	Complete.	A. F. Deniston.
Extra good.	Isolat'n, bromo-chloralum and sulphur; burial of stools.	No cases from these.	A. F. Deniston.
Good; house high and dry.	Isolation; room well ventilated.	No other cases.	C. L. Kinnaman.
Not good; stagnant creek near house.	Isolation; cleanliness; burning sulphur in room in small quantities.	No other cases followed.	C. L. Kinnaman.
Good at present.	Isolation; disinfect'n; quarantine.	Complete success.	C. P. Hart.
Sink drains on ground near house.	Isolation; disinfect'n; quarantine.	Complete success.	C. P. Hart.
Sanitary condition is good.	None.	.....	E. A. Steely.
Not good surroundings.	None.	Nobody infected.	H. N. Kinnear.
Good.	Isolation and disinfection.	Nurse contracted disease.	L. L. Johnson.
Bad; wet cellar.	Isolation and disinfection.	No others took it.	W. W. Hamer.
Poor.	Fumigation.	Good.	W. W. Hamer.
Poor; kitchen slops thrown on ground near well.	Isolation; disinfect'n; quarantine.	No spread of disease.	B. E. Miller.
Good.	Not isolated; disinfectants used.	No spread of disease.	G. L. Kreiger.
Bad from surface filth.	Isolation; disinfect'n; quarantine.	Perfect success.	C. P. Hart.

DIPHTHERIA—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin of disease.
			At present.	Prior to this case.		
1	Nov. 19	Hartwell.	No.	No.	No.	No known exposure.
1	" 19	Wyoming.	Yes.	Yes.	Yes.	No known exposure.
1	" 19	Lockland.	No.	No.	Yes.	Attended funeral of child who died with diphtheria.
3	" 19	Near Mifflin.	Yes.	3 years ago.	Yes.	Exposed to disease near Mansfield; cases 2 and 3 apparently contracted from case No. 1.
1	" 19	Near Mifflin.	No.	Yes.	No.	No known exposure.
1	" 19	Near Mifflin.	No.	Yes.	Yes.	Direct exposure.
1	" 19	Wyoming.	No.	Last year.	Yes.	No known exposure.
1	" 21	Milledgeville.	Yes.	Yes.	Yes.	No known exposure.
6	" 23	Near Dalton.	Yes.	No.	Yes.	No known exposure; first cases of epidemic.
4	" 24	Near Plain City.	Yes.	Don't know.	No.	No known exposure.
1	" 24	Russellville.	No.	Not lately.	No.	Works in mill—stagnant pond near by.
1	" 26	Harrison tp.	No.	No.	No.	No known exposure.
1	" 27	In country.	No.	No.	No.	No known exposure.
1	" 28	Convoy.	No.	No.	Yes.	No known exposure.
1	" 28	Convoy.	No.	No.	Yes.	No known exposure.
1	" 29	.....	No.	Year ago.	No.	No known exposure.
1	" 29	Wadsworth.	Yes.	No.	Yes.	No exposure — disease spread from Fulton—nine miles from Wadsworth—to Canton, and thence to Doylestown; extending in one year's time over territory 9 miles long and 2 miles wide; many cases of croup.
1	" 29	Wadsworth.	Yes.	No.	Yes.	No known exposure.
1	" 29	Near Holgate.	No.	No.	No.	None known.

DIPHTHERIA—Continued.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
Bad; filthy surroundings.	Isolation; disinfect'n; quarantine.	Perfect success.	C. P. Hart.
Bad.	Isolation; disinfection; quarantine.	Good.	C. P. Hart.
Apparently good.	Isolation; disinfection; quarantine.	.....	C. P. Hart.
Fair water, and drainage all right.	Called too late to isolate first case; sulphur fumigation three times a day.	Two other children in house did not take it.	C. D. Sacket.
Cellar half full of stagnant water.	Isolation.	No spread of disease.	C. D. Sacket.
Fair.	Isolation.	Other children in family escaped	C. D. Sacket.
Bad.	Isolation; disinfection; quarantine.	Perfect success.	C. P. Hart.
Good, but water bad.	Isolation; fumigation; private funeral.	Four other cases in house.	J. T. Mason.
Moderately good, water impure.	Quarantine of family—sulphur fumigation.	Very good.	A. W. Mitchell.
Bad, room filthy.	None in family—no visitors.	No other cases so far.	F. N. Mattoon.
.....	None.	.....	J. N. Salisbury.
Good.	Isolation through disinfection.	Did not spread.	R. L. Crooks.
Bad as could be.	Isolation; fumigation; general cleaning.	No other cases.	N. V. Speece.
Fair; bad water.	Isolation; disinfection; quarantine.	No spread of disease.	R. L. Crooks.
Bad; old, foul privy vault.	Isolation; disinfection; private funeral.	No spread of disease.	R. L. Crooks.
Bad; privy vault, hogpen, etc., close to house.	Isolation.	No spread.	R. C. Belt.
Good.	Isolation.	.....	N. S. Everhard.
Good.	Isolation.	Good.	N. S. Everhard.
Good.	Isolation.	Good.	N. S. Everhard.
Not good—drank surface stagnant water.	Disinfection.	Good.	J. M. Stout.

DIPHTHERIA—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Nov. 29	Centerburg.	No.	No.	Yes.	Drank water from well containing dead rats.
1	" 30	Chatfield tp.	No.	No.	Yes.	No known exposure.
1	" 30	Cranberry tp.	No.	No.	Yes.	No known exposure.
1	" 30	Chatfield tp.	No.	7 years ago.	Yes.	No known exposure.
1	" ...	Crestline.	No.	No.	No.	No exposure.
3	" 30	Country.	Yes.	Not known.	No.	No direct exposure; bad water.
1	" 30	Milledgeville.	No.	Not known.	No.	Direct exposure.
1	" 30	Country.	No.	No.	No.	Direct exposure.
1	" 30	Country.	No.	No.	No.	No exposure; bad water.
1	Dec. 1	Hudson.	No.	No.	No.	None known.
1	" 1	Hudson.	No.	No.	No.	Origin unknown.
1	" 1	Hudson.	No.	No.	No.	Origin unknown.
1	" 1	Hudson.	No.	No.	No.	Origin unknown.
1	" 1	Hudson.	No.	No.	No.	Origin unknown.
1	" 1	Venice tp.	No.	5 years ago.	Yes.	Met children from infected houses at school; mother had visited diphtheria patient.
1	" 1	New Washington.	No.	No.	No.	Attended funeral of diphtheria patient.
2	" 1	Blanchester.	Yes.	6 months ago.	No.	None known.
3	" 2	Terrace Park.	Yes.	No.	No.	No known exposure.
1	" 2	Cleves.	No.	No.	No.	None known.
1	" 2	Milledgeville.	No.	No.	No.	.....
1	" 2	Tulley tp.	No.	No.	No.	No known exposure.
1	" 2	Hudson.	No.	No.	.....	No known exposure.
1	" 3	.....	No.	Not known.	Yes.	.....
1	" 3	.....	No.	4 years ago.	Yes.	No known exposure.
1	" 3	De Graff.	Yes.	No.	Yes.	Nothing known.

DIPHTHERIA—Continued.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
House good; water very bad.	Isolation, disinfection; private funeral.	No new cases.	W. O. Phillips.
House surrounded with decaying vegetation.	Isolation, disinfection.	Eight children in family escaped.	Thos. F. Kellar.
Good.	Isolation, disinfection.	Other children in family escaped.	Thos. F. Kellar.
Good.	Isolation, disinfection.	Good.	Thos. F. Kellar.
Good.	Isolation, disinfection.	No further spread.	G. R. Edwards.
Very poor.	Incomplete isolation; disinfection.	Three others in family escaped.	J. T. Mason.
Good.	Isolation and fumigation.	Eight others in family escaped.	J. T. Mason.
Good.	Isolation, fumigation.	Good.	J. T. Mason.
Not good.	Isolation, fumigation.	Good.	J. T. Mason.
Good.	Platt's chlorides, visitors prohibited.	Good so far.	H. C. Coolman.
Fair.	Platt's chlorides, visitors prohibited.	Good.	H. C. Coolman.
Very good.	Platt's chlorides, visitors prohibited.	Good.	H. C. Coolman.
Very good.	Platt's chlorides, visitors prohibited.	Good.	H. C. Coolman.
Fair.	Bromo-chloralum, visitors prohibited.	Good as yet.	H. C. Coolman.
Fair.	Isolation, disinfection.	No spread in family.	Thos. F. Kellar.
Good.	Isolation, disinfection.	No spread in family.	Thos. F. Kellar.
Good.	None.	No new cases from these.	Lyman Watkins.
Not good.	Quarantine.	No spread.	R. C. Belt.
Very bad.	Could not do anything.	No other cases.	W. C. Hughes.
Good.	Isolation, disinfection.	No other cases yet.	J. O. Marsh.
Not good; house near stagnant water.	Isolation, disinfection, and general cleaning up.	No spread.	R. L. Crooks.
Good.	Isolation, carbolic acid.	No cases so far.	F. Hodge.
Bad; house in low, damp ravine.	.....	.....	Ellis Fleming.
Not good; water bad.	Isolation.	Other children in family escaped.	Ellis Fleming.
Good.	Disinfection with Park, Davis & Co.'s sulphur brick	Second person in family had it.	W. W. Hamer.

DIPHTHERIA—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
2	Dec. 5	Granville.	Yes.	No.	No.	No known exposure in case 1.
5	" 5	Country.	Yes.	No.	Yes.	Patients visited infected house.
1	" 5	Country.	No.	No.	No.	Direct exposure.
1	" 5	Garrettsville.	Yes.	A year ago.	No.	Exposed to other cases in same house.
1	" 5	Milledgeville.	No.	No.	No.	.....
2	" 9	Duncan's Falls.	Yes.	No.	Yes.	Case 1 contracted at school, case 2 from No. 1.
1	" 9	Duncan's Falls.	No.	No.	Yes.	Contracted at school, probably.
1	" 9	Duncan's Falls.	No.	No.	Yes.	Direct exposure.
1	" 10	Duncan's Falls.	Yes.	A year ago,	Yes.	No known exposure.
1	" 10	Country.	No.	Think not.	No.	No known exposure.
1	" 10	Country.	No.	No.	No.	No known exposure.
1	" 10	Country.	Yes.	Yes.	Yes.	Direct exposure.
1	" 11	Wyoming.	No.	2 weeks ago.	No.	Direct exposure.
1	" 12	Martin's Ferry.	No.	No.	Yes.	Not known.
1	" 13	Harbor.	No.	Don't know.	Yes.	No known exposure.
1	" 14	Near Harbor.	No.	Don't know.	Yes.	Children next door had sore throat.
1	" 24	Lithopolis.	No.	No.	No.	None known.
1	" 26	Ottawa.	Yes.	No.	Yes.	Direct exposure.
1	" 26	Belle Centre.	No.	8 years ago.	No.	Came from town where diphtheria prevailed.
1	" 26	Milford.	No.	5 weeks ago.	No.	Second attack, patient had disease 5 weeks ago.
1	" 26	Near Milford.	No.	6 mos. ago.	No.	No known exposure.
1	" 26	Ottawa.	No.	No.	Yes.	Direct exposure.
2	" 27	Hudson.	Yes.	No.	No.	None known.
3	" 28	Milledgeville.	Yes.	.....	Yes.	Attributed to bad water.
1	Jan. 7	North Findlay.	No.	No.	No.	Probably exposure.
1	" 7	Country.	No.	Not known.	No.	Nothing known.
4	" 7	Independence.	Yes.	No.	No.	Case No. 1 followed scarlet fever, other cases exposed to No. 1.
2	" 7	Delaware.	Yes.	No.	No.	No known exposure.
2	" 7	Country.	Yes.	4 years ago.	No.	None known.
1	" 7	Broadway.	No.	No.	No.	Nothing known.
2	" 7	Tremont.	No.	No.	.....	Nothing known.

DIPHTHERIA—Continued.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
Good.	Isolation, disinfection, quarantine but pub. funeral.	No new cases yet.	E. Sinnett.
Pretty fair.	Isolation of first case impossible.	No success.	H. L. Rosenberry.
Good.	Fumigation, isolation, drinking-water boiled.	No further spread.	J. T. Mason.
Good.	Isolation, disinfection, private funeral.	.....	L. L. Johnson.
Good.	.....	.....	J. T. Mason.
Good.	Disinfection, quarantine, except parents.	No other cases.	O. B. Crumbacker.
Good.	Isolation, parents nursed child.	Father contracted disease.	O. B. Crumbacker.
Good.	Incomplete isolation.	Daughter cont'd dis.	O. B. Crumbacker.
Fairly good.	Isolation & disinfection.	1 other case in family.	O. B. Crumbacker.
Good.	Isolation, disinfection quarantine.	Good so far.	John Wallace.
Fair, drainage not good.	Disinfection, could not quarantine.	Did not spread.	J. D. Smith.
Not good.	Incomplete isolation.	Six cases from it.	H. L. Rosenberry.
Surface pollution.	Isolation, disinfection quarantine.	No further spread.	C. P. Hart.
Good, but bad alley near.	Isolation, disinfection quarantine.	No spread.	B. O. Williams.
Seemingly good.	Measures not carried out.	No cases from this one.	H. N. Kinnear.
Not good.	Isolation, disinfection.	No new cases.	H. N. Kinnear.
Not very good.	Isolation, disinfection.	No other cases.	Geo. S. Courtright.
Bad — large hen-house joined to building.	Removal of hens, general renovation and disinfection.	Good.	C. E. Beardsley.
Reasonably good.	Isolation.	Good so far.	John Wallace.
Good.	Isolation.	No spread.	R. C. Belt.
Very good.	Isolation.	No spread so far.	R. C. Belt.
Fair.	Prohibited visitors, good so far.	Good so far.	C. E. Beardsley.
Excellent.	Platt's chlorides, no visitors.	Good.	H. C. Coolman.
Good.	Disinfection.	.....	J. T. Mason.
Good.	Isolation, disinfection.	Very good.	B. M. Pahl.
Not good, filthy.	Disinfection.	Very good.	B. M. Pahl.
Bad, very filthy.	Quarantine and disinfection.	No spread beyond family.	I. N. Noland.
First-class.	House placarded.	.....	Prof. E. T. Nelson.
Good.	Disinfection.	Good.	B. M. Pahl.
Good.	Isolation, disinfection.	No other cases.	J. B. Taylor.
Good.	Nothing done.	.....	R. B. Woodward.

DIPHTHERIA—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Jan. 7	Madisonville.	No.	No.	Yes.	Probable exposure.
1	" 7	Columbus Grove.	No.	No.	No.	.....
2	" 7	Columbus Grove.	No.	No.	Yes.	Case one exposed to child with sore throat; case 2 exposed to No 1.
1	" 7	Near Lewisville.	No.	No.	No.	Came home from visit with disease.
1	" 7	Near Bucyrus.	No.	No.	Not near.	No known exposure.
1	" 9	Harbor.	No.	Not lately.	Yes.	Nursed diphtheria patient.
1	" 9	N. Philadelphia.	No.	No.	No.	Nothing known.
1	" 9	Near Range.	No.	10 years ago.	No.	No known exposure.
1	" 10	Blanchester.	No.	No.	No.	Child with sore throat slept with case several days before.
1	" 13	Hudson.	No.	No.	No.	No known exposure; child died of diphtheria on opposite side of street.
1	" 13	North Bend.	No.	No.	No.	Nothing known.
1	" 13	Union Plain.	No.	No.	No.	No known exposure.
1	" 13	Nevada.	No.	No.	No.	Nothing known.
1	" 13	Marion.	No.	No.	Yes.	Contracted from sister who died of disease two weeks ago.
1	" 13	Marion.	Yes.	No.	Yes.	.....
1	" 13	Harbor.	Yes.	No.	No.	Patient went in house where disease had lately been, and no disinfectants used.
1	" 13	Columbus Grove.	Yes.	Yes.	Yes.	Other cases of disease lately in same house.
2	" 14	Marion.	No.	No.	Yes.	Exposed at school to teacher having disease; case No. 2 contracted from case No. 1.
2	" 14	Near Kerr P. O.	No.	No.	Yes.	.....
1	" 14	Country.	Yes.	No.	No.	Direct exposure.
1	" 14	Country.	Yes.	No.	No.	Origin unknown.
2	" 14	Country.	No.	Yes.	No.	Direct exposure.

DIPHTHERIA—Continued.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
Good.	Isolation; disinfection; quarantine.	No other cases in family.	J. O. Marsh.
Good.	Partial isolation and ventilation.	Good.	Jos. Morris.
Fair.	Cleanliness and ventilation and partial isolation.	Did not spread beyond family.	Jos. Morris.
Good.	.....	.....	Weber & Diehl.
Tolerably good.	Isolation and disinfection.	No other outbreaks.	J. B. Kreider.
Not good.	Isolation.	No spread so far.	H. N. Kinnear.
Fairly good.	Isolation; disinfection; quarantine.	Good so far.	J. T. McClain.
Fair, but water bad.	Disinfection — could not isolate.	Another child took it.	C. M. Deem.
Ordinary.	None.	No spread.	Lyman Watkins.
Fairly good.	Isolation; disinfection; quarantine and private funeral.	No spread of disease.	G. L. Starr.
Seemingly good.	An only child, visitors prohibited.	No spread.	W. C. Hughes.
Fairly good.	Isolation and disinfection.	Good.	S. P. Sheldon.
Fair.	Isolation; disinfection.	Good.	A. H. McCrory.
Good.	Isolation; quarantine.	Good.	A. Rhu.
Fair—on low ground.	None, so far as known.	.....	A. Rhu.
Bad.	Isolation; disinfection.	Good.	H. W. Dorman.
Fair.	Partial isolation, ventilation; disinfection.	Good.	Joseph Morris.
Bad, sink empties into cellar.	Burnt clothes containing sputa.	No other cases in family.	A. A. Nefe.
Not very good.	Isolation; ventilation; disinfection.	No further spread	R. D. Jacobs.
Good.	Isolation and disinfection.	Effectual, so far.	A. S. Kinnaman.
Good.	Could not isolate.	Second case followed.	J. Rupp.
Good.	.....	.....	J. Rupp.

DIPHTHERIA—Continued.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Jan. 16	Near Range.	Yes.	2 mos. ago.	No.	Direct exposure.
1	" 16	Ashtabula.	No.	No.	No.	Cared for child brought from house containing diphtheria.
1	" 18	Clearport.	No.	2 years ago.	No.	No known exposure.
1	" 18	Revenge.	No.	No.	No.	Nothing known.
3	" 28	Saltercreek Tp.	No.	Think not.	No.	Direct exposure; cases 2 and 3 contracted from case No. 1.
2	Feb. 6	Country.	No.	Yes.	Yes.	Direct exposure.
1	" 6	Lake Co. Infir'ry.	No.	Not lately.	No.	Nothing known.
1	" 7	Country.	Yes.	8 years ago.	No.	Carried in the mother's clothes.
1	" 6	Harbor.	No.	No.	No.	Nothing known.
1	" 7	W. Farmington.	No.	No.	No.	Exposed to convalescent patient.
1	" 7	W. Farmington.	No.	Don't know.	No.	No known exposure.
1	" 17	Crestline.	No.	Year ago.	No.	No known exposure.
1	" 17	Blanchester.	No.	Year ago.	No.	None known.
1	" 17	Utica.	No.	No.	Yes.	No known exposure.
1	" 17	Harbor.	No.	Don't know.	No.	No known exposure.
1	" 18	Moxahala.	Yes.	Not known.	No.	Family moved next door that previously lost two children from diphtheria; no disinfection had been practiced.
1	" 18	Utica.	No.	2 years ago.	Yes.	No known exposure.
1	" 20	E. Palestine.	Yes.	No.	Yes.	Origin not known.
1	" 20	E. Palestine.	Yes.	Don't know.	Yes.	No known exposure—think it was caused by filthy surroundings.
1	" 28	Near Senecaville.	Yes.	No.	Yes.	Origin not known.
1	" 30	Fredericksburg.	No.	No.	No.	No known exposure; case in adjoining house a year ago.
1	Mar. 1	New Phil'd'lphia.	No.	No.	No.	Nothing known; patient came here sick from Iowa.
1	" 2	Mt. Repose.	Yes.	Yes.	No.	Patient was away; taken sick six days after coming home; had diphtheria in same house when a child.

DIPHTHERIA—Continued.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
Fair. Good.	Disinfection. Isolation.	Did not spread. No spread.	C. M. Deem. H. N. Kinnear.
Good. Not good; very filthy.	Cleanliness. Isolation impossible; disinfection.	No spread. Good.	W. S. Rutter. W. S. Rutter.
Fair.	Imperfect isolation.	.....	O. B. Crumbacker.
Good. Good.	..... Instructions given by St. B'd of Health.	..... Perfect success.	J. A. Bowdle. C. M. Hawley.
Very good.	None; a public funeral.	Two other children took it.	Lyman Watkins.
Good.	Incomplete isolation.	Two sisters contracted disease.	H. N. Kinnear.
Average farm house.	Isolation.	Others in family had sore throat.	W. J. Haine.
Fair.	Isolation; disinfecting; quarantine.	No other cases.	W. J. Haine.
Good, but on low ground.	Isolation.	Good, so far.	G. R. Edwards,
Good.	None.	No spread.	Lyman Watkins.
Good.	Isolation.	No other cases.	G. W. Garrison.
Fair.	Isolation; other children sent away.	No new cases so far.	H. N. Kinnear.
Very poor; whole family (6) occupies one room.	Quarantine; could enforce no other measures.	No other cases have occurred.	M. W. Cummings.
Good.	Isolation.	No other case in house.	G. W. Garrison.
Pretty good.	Isolation; disinfection.	Brother waiting on patient contracted disease.	A. S. McCaskey.
Very bad; well receives surface drainage.	Disinfecting; could not isolate.	Two others in house contracted disease.	A. S. McCaskey.
Good. Bad; wet, badly ventilated cellar.	Prohibited visitors. Isolation; disinfecting and quarantine.	..... Good so far.	A. R. Cain. E. E. Ash.
.....	Isolation; disinfecting and quarantine.	Perfect so far.	J. T. McClean.
Good.	Isolation; disinfecting.	No more cases.	R. C. Belt.

DIPHTHERIA—Concluded.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Mar. 2	Near Milford.	No.	8 years ago.	Yes.	Direct exposure.
1	" 2	Terrace Park.	No.	No.	No.	No known exposure.
1	" 3	Garrettsville.	No.	3 years ago.	No.	Nothing known.
1	" 4	Ludlow Tp.	No.	Not known.	.....	Exposure and bad water supply.
2	" 6	Hamburg.	Yes.	3 years ago.	Yes.	No known exposure.
1	" 6	Near Hamburg.	No.	No.	Yes.	No known exposure.
2	" 7	Kerr Station.	Yes.	No.	Yes.	No known exposure.
1	" 7	Cleveland.	No.	No.	No.	No known exposure; sewer gas leaks into cellar.
2	" 7	Country.	Yes.	No.	No.	Think it was contracted at school.
1	" 9	Near Potsdam.	No.	8 years ago.	Yes.	Origin unknown.
1	" 9	Near Potsdam.	Yes.	Don't know.	Yes.	Contracted at school.
1	" 10	Country.	No.	2 years ago.	Yes.	No known exposure.

The above table may be summarized as follows :

LOCATION.

Seventy-six of the reports locate the disease in the country, the majority of the remainder in small towns.

FACTS BEARING UPON THE ORIGIN.

Fifty reports state that other cases of the disease were present in the same house at the same time.

Sixty-four reports state the disease to have occurred in the same house at some time prior to the case reported.

Thirteen can obtain no information in regard to the latter question.

Ninety-two report the disease present in the neighborhood of cases reported.

The disease is attributed to direct exposure in ninety-two instances; to infected clothing in five, and to attending funerals of persons dying of diphtheria in four instances.

SANITARY CONDITION OF HOUSE AND SURROUNDINGS.

Eighty-eight report the condition of surroundings to have been good, sixty-two bad or not good, and thirty-nine fair.

DIPHTHERIA—Concluded.

Sanitary condition of house and surroundings.	Preventive measures taken.	Success in restricting disease.	Physician reporting.
Fair; damp cellar.	Isolation.	No other cases so far.	R. C. Belt.
Good.	Isolation and disinfection.	No more cases.	R. C. Belt.
Good.	Usual methods, including fumigation.	No new cases.	L. L. Johnson.
Not good.	Isolation and disinfection.	Good.	Ellis Fleming.
Apparently good.	Cleanliness; could not isolate.	No other cases in large family.	W. S. Rutter.
Very poor.	Partial isolation and cleanliness.	Large family; no other cases.	W. S. Rutter.
Seems to be good.	Isolation; disinfecting; good air.	No further spread.	R. D. Jacobs.
Good, excepting sewerage.	Isolation and quarantine.	Two other children in family escaped.	C. L. Kinnaman.
Average farm house.	None taken, except neighbors excluded.	Two cases in family; spread no further.	John Wallace.
Poor.	Isolation.	No other cases from this one.	S. P. Deahofe.
Fair.	Isolation.	Good.	S. P. Deahofe.
Fair.	Isolation.	Good.	F. D. Wygum.

PREVENTIVE MEASURES TAKEN.

Isolation and disinfection were practiced in eighty-two instances; isolation in thirty-three, and disinfection in thirty.

Twenty-five report that no precautions were taken, and three that public funerals were held.

SUCCESS IN RESTRICTING DISEASE.

Of the eighty-two cases in which disinfection and isolation were both practiced, the disease spread from three; of the thirty-three cases in which isolation was practiced the disease spread from eight; in six of the latter, however, the isolation was said to have been incomplete.

Of the thirty cases in which disinfection alone was practiced, the disease spread from four. Of the twenty-five cases in which no precautions were taken, the disease spread from three.

The disease spread in each of the three instances in which public funerals followed death.

SCARLET-FEVER.

TABLE BASED UPON SIXTY-FOUR REPORTS OF SCARLET-FEVER, SHOWING LOCATION, ORIGIN, AND MEASURES OF PREVENTION.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
5	1887. Sept. 3	Nr. Milnersville.	Yes, 4.	Not lately.	Yes.	From case of supposed measles brought from Bellaire.
1	" 4	Nr. Milnersville.	No.	No.	Yes.	Carried in clothes of the father.
1	" 6	Nr. Milnersville.	No.	No.	Yes.	Carried in clothing from case in town.
2	" 6	Sandusky.	Yes, 1.	No.	Yes.	Called at house where cases lately occurred.
1	" 6	Sandusky.	No.	Don't know.	Yes.	Nothing known.
1	" 7	Marion tp.	No.	No.	No.	Lives at railroad station; no known exposure.
1	" 8	Nr. Paulding.	Yes, 1.	No.	Yes.	Was directly exposed to disease.
1	" 8	Nr. Paulding.	No.	No.	Yes.	Direct exposure.
1	" 12	Nr. Paulding.	Yes, 1.	No.	Yes.	Direct exposure.
1	" 12	Nr. Paulding.	Yes, 1.	Yes.	Yes.	Exposure to case in same house.
1	" 12	Nr. Paulding.	No.	Yes, recently.	N't nr.	Other cases recently in same house.
1	" 16	Sandusky.	No.	No.	No.	Nothing known.
1	Oct. 1	Farmer tp.	No.	No.	Yes.	Parents of child met case of disease at fair.
1	" 1	Farmer.	No.	No.	Yes.	Mother visited where disease was present.
1	" 1	Farmer.	No.	No.	Yes.	Mother visited house containing disease.
1	" 19	Plainfield.	No.	No.	No.	Origin not known.
2	" 27	Near Laura.	Yes, 1.	Not lately.	Yes.	Not known, but disease is in the school.
1	" 28	Senecaville.	No.	Six yrs. ago.	No.	Origin not known.
1	Nov. 4	Nr. Carey.	Yes, 2.	Not known.	No.	A brother and sister had disease preceding week; origin of those cases not known.
3	" 11	Washington tp.	Yes, 4.	Think not.	.....	Disease possibly brought from near Jamestown, Ky.
1	" 18	Crestline.	No.	No.	No.	No known exposure.
3	" 18	Independence.	Yes, 2.	Think not.	No.	No known exposure.
1	" 18	Nr. Gibson.	No.	No.	Yes.	Case in neighborhood, but not near patient.

SCARLET-FEVER.

TABLE BASED UPON SIXTY-FOUR REPORTS OF SCARLET-FEVER, SHOWING LOCATION, ORIGIN, AND MEASURES OF PREVENTION.

Preventive measures taken.	Success in restricting disease.	Physician reporting.
Disinfection; could not isolate, and whole family, except the mother, had disease.	So far no new cases in immediate neighborhood.	W. B. Rosamond.
Isolation and disinfection.	So far good.	W. B. Rosamond.
Isolation and disinfection.	No other cases in family.	W. B. Rosamond.
Impossible to do anything.	.....	L. S. Szendery.
Isolation.	No new cases on fifth day.	L. S. Szendery.
Isolated from all but nurse.	.....	Wm. Phillips.
Isolation and disinfection ordered.	Not obeyed; other cases followed.	P. Alvin Dix.
Isolation and disinfection.	No new cases after two weeks.	P. Alvin Dix.
Isolation and disinfection ordered; not obeyed.	Two or three other cases followed.	P. Alvin Dix.
Isolation and disinfection.	No new cases after two weeks.	P. Alvin Dix.
Disinfection, patient being last of family to have disease.	.....	P. Alvin Dix.
None.	Did not spread.	L. S. Szendery.
Isolation and sulphur fumigation.	Good.	B. E. Miller.
Sulphur fumigation.	Good.	B. E. Miller.
Sulphur fumigation.	Good.	B. E. Miller.
Isolation and fumigation, but public funeral.	Good.	Walker & Hoosick.
.....	.....	J. P. Brandon.
Isolation.	No spread of disease.	A. R. Cain.
Ignorant family with several children; impossible to carry out isolation.	.....	F. W. Brayton.
Disinfection and isolation.	.....	N. S. Hill.
Disinfection, but could not isolate.	So far no other cases.	G. R. Edwards.
Disinfection, but visiting freely indulged in.	General spread of disease.	I. N. Noland.
Only one child in isolated house.	.....	A. R. Cain.

SCARLET-FEVER—Continued.

No of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
2	Nov. 18	Huron.	Yes.	No.	No.	Case No. 1 exposed at Elyria; case No. 2 contracted disease from No. 1.
1	" 18	Huron.	No.	No.	Yes.	Direct exposure.
3	" 18	Huron.	Yes.	No.	Yes.	Cases one and two exposed to convalescent visitor from Norwalk; case No. 3 came to house to nurse cases 1 and 2.
1	" 19	Near Bowling Green.	No.	No.	No.	No known exposure.
7	" 30	Near Petersburg.	Yes.	No.	Yes.	Origin not known, but first case in this neighborhood was brought from an adjoining town.
2	" 30	Near Petersburg.	Yes.	Not known.	Yes.	Thought to have been exposed at school.
1	" 30	Near Petersburg.	Yes.	No.	Yes.	Thought to have been exposed at Sunday school.
1	" 30	Independence.	No.	Think not.	Yes.	Transmitted by clothing of child previously affected.
1	" 30	Independence.	No.	Yes, 6 years ago.	Yes.	Thought to have been carried in clothing.
2	" 30	Independence.	Yes.	Yes.	Yes.	Contracted at school.
1	Dec. 1	Steubenville.	Yes.	No.	Yes.	Origin not known.
1	" 10	Carey.	No.	Yes, 4 weeks ago.	No.	Mother of child which had disease a month ago.
4	" 10	Washington C. H.	Yes.	Not known.	No.	Origin unknown.
2	" 23	Upper Sandusky.	Yes.	No.	No.	Origin not known.
2	" 31 1888.	Near Madisonville.	Yes.	Yes.	No.	Modified case occurred in same house two months prior.
1	Jan. 6	Dayton.	Yes.	No.	No.	Origin not known.
1	" 6	Near Oberlin.	No.	No.	No.	Father came from Elyria, where disease was present.
4	" 7	Independence.	Yes.	No.	Yes.	Frequent visiting of sick by neighbors and school teacher; about 40 cases in the school district.
2	" 7	Independence.	Yes.	No.	Yes.	Promiscuous visiting.
1	" 7	Independence.	No.	No.	Yes.	Promiscuous visiting.
1	" 13	New Petersburg.	Yes.	No.	Yes.	Direct exposure.
1	" 13	Near Cincinnati.	Yes.	Yes.	No.	Exposure to previous case.
1	" 13	Switzer.	No.	Month ago.	No.	Exposed to previous cases in same house.

SCARLET-FEVER—Continued.

Preventive measures taken.	Success in restricting disease.	Physician reporting.
Isolation, disinfection and partial quarantine.	A child from one visit contracted disease.	Jos. P. Esch.
Isolation and disinfection. Isolation and disinfection.	No cases from this one. No other cases from these.	Jos. P. Esch. Jos. P. Esch.
Complete isolation and disinfection. Tried to enforce isolation with first case, but of no avail.	No other cases in family. None.	G. Higgins. Rufus A. Dwyer.
Advised isolation — not followed. Kept in house.	None. Sister took the disease.	W. R. L. Dwyer. W. R. L. Dwyer.
Isolation, disinfection and quarantine.	Traced no cases to this family.	I. N. Noland.
Isolation, disinfection and quarantine.	No cases from this one yet.	I. N. Noland.
Isolation, disinfection and quarantine.	Good, I think.	I. N. Noland.
Disinfection—too late for isolation.	Sister took the disease.	A. A. Elliott.
Isolation incomplete.	.....	F. W. Brayton.
Disinfection, isolation and quarantine.	Perfect success.	D. H. Hare.
Disinfection, isolation and private funeral.	Second member of family took it.	I. N. Bowman.
Isolation, disinfection and quarantine.	.....	J. O. Marsh.
Quarantined by health officer. Quarantine of family.	One case in same family. No new cases.	J. D. Daugherty. Julia C. Jump.
From ignorance of people, little could be done.	General spread of disease in neighborhood.	I. N. Noland.
.....	.....	I. N. Noland.
.....	.....	I. N. Noland.
None.	Six members had it.	Rufus A. Dwyer.
Isolat'n; disinfect'n; quarant'ne.	No spread of disease.	A. O. Marsh.
Complete isolation.	No spread in neighborhood.	J. Rupp.

SCARLET-FEVER—Concluded.

No. of cases.	Date.	Residence.	Other cases in same house.		Other cases in neighborhood.	Facts regarding origin.
			At present.	Prior to this case.		
1	Jan. 14	Near Delta.	No.	5 years ago.	Yes.	Direct exposure.
1	" 16	Martin's Ferry.	No.	No.	Yes.	Direct exposure.
2	" 16	Independence.	Yes.	No.	No.	Exposed at school.
1	Feb. 6	Near Amboy.	No.	No.	Yes.	Family brought it to Amboy, where it at once spread through school.
1	" 6	Martin's Ferry.	Yes.	Yes.	Yes.	Exposure in same house.
2	" 8	Near Rainsboro.	Yes.	No.	No.	No known exposure.
1	" 11	Near Paulding.	No.	Yes.	No.	Direct exposure.
1	" 11	Near Charloe.	No.	No.	Yes.	Direct contact.
1	" 17	Huron.	No.	Month ago.	No.	Used a feath'r-bed in which a child previously sick with disease had slept—bed simply been aired for some time.
1	" 20	Conneaut.	No.	No.	Yes.	Had been to Amboy, where disease is endemic.
1	" 20	Conneaut.	No.	No.	Yes.	Exposure not known.
1	" 20	Conneaut.	No.	No.	No.	Number of cases in same town occur'd about same time among those attending a dance.
1	Mar. 19	Near White Cottage.	No.	No.	No.	Sporadic case; can't trace contagion.
1	.....	Ludlow Falls.	Yes.	Not known.	No.	Person in family attended funeral of a child in Dayton, dying of scarlet-fever or diphtheria.
1	.....	Dayton.	No.	No.	No.	No exposure; followed parturition; diphtheria in family visiting patient.

The above table may be summarized as follows :

FACTS BEARING UPON THE ORIGIN.

Twenty-eight of the reports state other cases of the disease to have been present in the same house at the same time; fifteen that the disease had been present in the same house at some prior time, and five that the latter is unknown.

Thirty-four report the disease present in the neighborhood of cases reported.

Twenty-six reports state that the disease was due to direct exposure; nine that it was carried in the clothing of parents or visitors.⁶ In one case

SCARLET-FEVER—Concluded.

Preventive measures taken.	Success in restricting disease.	Physician reporting.
Isolat'n, disinfect'n and quarant'e.	No new cases.	S. P. Bishop.
" " "	No new cases so far.	B. O. Williams.
" " "	No cases from these.	I. N. Noland.
Isolation.	No other cases yet.	W. A. Ward.
Isolat'n, disinfect'n and quarant'e.	No cases near since.	B. O. Williams.
Isolation.	No other cases so far.	D. N. McBride.
Isolat'n, disinfect'n and quarant'e.	No other cases yet.	P. Alvin Dix.
" quarantine of family.	No other cases.	P. Alvin Dix.
Isolation.	All right so far.	J. P. Esch, H. O.
Isolation, disinfection.	Can't say.	W. A. Ward.
" "	Cannot say.	W. A. Ward.
Disinfection and quarantine.	Trace no cases to this one.	W. A. Ward.
Incomplete isolation.	Other children in family took disease.	A. W. Squires.
Children removed from house.	No other cases followed.	A. Scheibuzuber.

a feather-bed in which a scarlet-fever patient had slept, conveyed the disease.

MEASURES OF PREVENTION.

Isolation and disinfection were practiced in twenty-eight cases; isolation alone in ten, and disinfection alone in five; in ten cases no preventive measures were taken.

SUCCESS IN RESTRICTING THE DISEASE.

The disease spread in eleven instances. In two of these incomplete isolation was practiced; in four, nothing was done; in two, disinfection alone was practiced; in one, quarantine by health officer, and in one other, isolation, disinfection and private funeral.

ABSTRACT OF REPORTS OF DEATHS, AND THEIR CAUSES, IN TWENTY-

Place.	Estimated population.	Total deaths, all causes.	Annual rate per 1000.	Total Zymotic diseases.	Croup and diphtheria.	Cholera infantum.	Cerebro-spinal meningitis.	Diarrhoea.	Dysentery.	Measles.	Scarlet-fever.	Typhoid-fever.	Whooping-cough.	Total constitutional diseases.
Akron.....	30,000	402	13.40	131	16	39	1	2	.....	11	.....	7	18	55
Ashtabula.....	6,500	118	16.61	40	9	5	2	4	.....	.....	3	12	.....	17
Bellaire.....	12,000	154	12.84	32	2	4	2	11	.....	1	.....	5	.....	30
Bellevue.....	3,560	43	12.28	10	2	1	.....	.....	.....	.....	2	.....	2	6
Canton.....	25,000	308	12.32	109	28	52	2	.....	.....	1	2	13	.....	62
Cincinnati.....	325,000	6,276	19.26	1,451	245	166	42	139	36	7	17	390	42	1,203
Cleveland.....	235,000	4,500	19.23	1,393	373	341	4	219	15	15	20	116	71	652
Columbus.....	101,000	1,285	12.72	304	43	87	23	.....	17	5	7	65	18	208
Cuyahoga Falls...	2,800	27	9.64	5	.....	1	1	.....	2	1	.....	.....	.....	4
Dayton.....	60,000	828	13.80	161	40	32	13	6	3	2	5	17	6	177
Defiance.....	7,000	105	15.00	35	2	10	1	1	.....	9	.....	.....	.....	28
Delaware.....	9,000	110	12.22	17	3	.....	.....	.....	1	1	.....	6	.....	28
E. Liverpool.....	10,000	107	10.70	50	12	4	.....	1	.....	5	1	13	.....	4
Galion.....	6,500	79	12.15	16	3	2	1	.....	2	.....	.....	3	.....	19
Hamilton.....	20,000	275	13.75	51	5	18	2	3	2	.....	.....	8	1	52
Hudson.....	1,700	22	12.94	9	4	.....	.....	.....	.....	2	.....	.....	.....	2
Mansfield.....	15,000	106	7.07	24	2	4	.....	2	1	4	.....	2	.....	22
Miamisburg.....	3,000	49	16.33	8	5	.....	1	.....	.....	.....	.....	1	.....	8
Middletown.....	8,000	120	15.00	29	18	4	.....	.....	3	.....	.....	2	.....	19
Portsmouth.....	14,000	233	16.64	56	14	5	3	3	3	.....	7	5	2	52
Toledo.....	82,000	1,100	13.41	236	26	68	10	39	9	7	6	22	12	207
Urbana.....	8,000	107	13.37	21	1	7	2	.....	3	.....	2	3	.....	33
Wadsworth.....	2,500	35	14.00	11	6	2	.....	.....	.....	.....	.....	1	.....	2
Warren.....	8,000	70	8.75	14	4	2	.....	.....	1	2	.....	.....	2	14
Waverly.....	1,600	21	13.12	1	.....	.....	1	.....	.....	.....	.....	.....	.....	4
Youngstown.....	24,300	371	15.27	185	18	26	5	19	.....	28	.....	4	15	61
Totals.....	1,021,400.	16,851	16.50	4,348	881	880	116	449	98	101	73	695	191	2,969

SIX CITIES AND TOWNS IN OHIO, FOR THE YEAR ENDING OCTOBER 31, 1888.

Cancer.	Phthisis, Pulmonalis.	Total local diseases	Apoplexy.	Bright's disease.	Bronchitis.	Convulsions.	Gastritis and peritonitis.	Heart disease.	Meningitis.	Pleurisy.	Pneumonia.	Total developmental diseases.	Total violence.	Authority.
7	87	158	4	17	5	10	1	19	3	.....	43	33	13	Dr. L. S. Ebright, H. O.
4	11	40	7	5	.....	4	1	10	5	.....	3	14	6	Dr. A. W. Hopkins, H. O.
2	19	72	7	.....	5	7	6	6	12	.....	9	15	8	Dr. J. Park West, H. O.
2	5	11	3	.....	.....	1	.....	4	1	1	1	12	4	John Earls, H. O.
9	33	91	3	.....	.....	13	3	12	15	.....	29	23	20	Dr. S. A. Conklin, H. O.
144	773	2,927	85	70	265	381	130	277	210	4	513	405	278	Dr. Byron Stanton, H. O.
100	365	1,803	59	51	113	350	122	169	164	8	374	443	199	Dr. G. C. Ashmun, H. O.
44	162	552	16	15	28	44	39	96	31	.....	85	102	69	Dr. F. Gunsaulus, H. O.
.....	1	7	2	.....	.....	.....	.....	3	.....	.....	.....	11	.....	Dr. W. S. Hough, H. O.
31	109	340	10	6	20	41	20	58	48	1	68	107	39	Dr. J. M. Weaver, H. O.
2	25	31	3	.....	8	6	1	3	.....	5	8	3	3	S. Haller, Secretary.
1	19	56	8	1	1	1	5	5	4	.....	20	6	2	Dr. J. M. Cherry, H. O.
2	.....	31	1	1	1	5	3	5	2	.....	7	11	8	Wm. Gibbs, H. O.
1	16	32	2	.....	5	1	1	9	.....	.....	6	9	2	Dr. Webb J. Kelly.
5	34	151	6	4	4	18	4	17	10	.....	26	15	9	Dr. J. M. Parks, H. O.
.....	1	7	1	.....	1	.....	.....	1	.....	.....	3	2	2	Dr. F. Hodge, H. O.
3	14	48	1	.....	.....	8	.....	2	.....	.....	9	10	2	Dr. R. Harvey Reed, H. O.
.....	9	18	3	1	.....	.....	2	4	.....	.....	3	4	1	Dr. W. S. Bookwalter, H. O.
4	13	47	2	.....	.....	3	1	7	8	.....	4	15	3	Dr. Wm. T. Sutphen, H. O.
10	41	93	.....	1	11	4	2	28	6	.....	6	22	8	Dr. J. P. Bing, H. O.
29	136	509	15	10	49	52	25	59	38	1	89	87	54	Dr. G. A. Collamore, H. O.
1	25	44	3	5	1	5	1	11	7	.....	6	6	4	Dr. S. M. Mosgrove, H. O.
.....	1	13	1	2	.....	1	.....	10	.....	.....	.....	8	1	H. H. Bricker, H. O.
4	10	29	4	.....	7	.....	.....	4	2	.....	2	4	8	Dr. S. H. Smith, H. O.
.....	4	12	.....	.....	.....	1	.....	1	.....	.....	4	3	1	Dr. Austin Hutt.
9	44	140	4	19	4	14	14	23	18	.....	31	28	12	Dr. W. L. Buechner, H. O.
414	1,907	7,262	250	209	528	873	381	844	587	15	1,352	1,410	756	

The above table comprises the returns of deaths in twenty-six cities and villages, from which complete returns for the year were received and published monthly by the State Board.

We have endeavored to secure returns from all places having boards of health, but in many of these no records of deaths are made, and from others it was not possible to obtain complete reports.

The table, it is true, presents but a partial report, the aggregate population represented amounting to a little more than a quarter of the entire population of the State. This population, also, is principally urban.

It is to be regretted that no better account can be given of the mortality of our State—"The Great State of Ohio."

Ohio statistics gives the number of deaths reported by probate judges for the year ending March 31, 1887, as 30,818, which, with a population of three and a-half millions, would give a death rate of 8.8 per thousand, a remarkably low rate, surely.

TOTAL DEATHS.

The total number of deaths reported from all causes—excluding premature and still-births—by the cities and towns represented in the table, was 16,851.

The estimated population of these cities and towns is 1,021,400, which gives an average death rate of 16.50 per thousand living inhabitants.

The highest death rate was in Cincinnati—19.26 per thousand; Cleveland following closely with 19.23. The lowest death rate was in Mansfield, where the extremely low rate of 7.07 per thousand was recorded.

The number of deaths reported each month was as follows:

January	1,514	July	1,633
February	1,338	August	1,651
March	1,495	September	1,324
April	1,353	October	1,152
May	1,244	November (1887)	1,388
June	1,300	December	1,459

The greatest number of deaths was reported in August; the least number in October.

ZYMOTIC DISEASES.

The total number of deaths from zymotic diseases reported was 4,348, a little more than 25 per cent. of the entire number of deaths from all causes.

Of this number Cincinnati and Cleveland furnish 2,844.

The number of deaths reported from zymotic diseases each month was as follows:

January.....	319	July.....	640
February.....	280	August.....	701
March.....	249	September.....	451
April.....	191	October.....	282
May.....	186	November (1887).....	402
June.....	293	December (1887).....	354

The months having the greatest number of deaths reported were July and August. Those having the least number were April and May.

As will be seen further on, cholera infantum and diarrhœa swelled the list of zymotic diseases during the hot months, while typhoid-fever, croup and diphtheria increased the list for the fall and early winter months.

Of the 4,348 deaths from zymotic diseases, Cincinnati and Cleveland reported 2,844.

The death rate per thousand of the population of the cities and towns represented was 4.25.

CROUP AND DIPHTHERIA.

The total number of deaths reported from croup and diphtheria was 881.

These were distributed by months as follows:

January.....	124	July.....	11
February.....	96	August.....	31
March.....	59	September.....	56
April.....	53	October.....	90
May.....	30	November (1887).....	139
June.....	36	December (1887).....	146

The greatest number of deaths was reported in December, 1887; the least number in July, 1888.

Of the entire number, 881, Cincinnati and Cleveland furnished 518 deaths, Cleveland reporting 373 deaths from this cause.

The mortality per thousand of the living population (estimated) was 86.

CHOLERA INFANTUM AND DIARRHŒA.

The total number of deaths reported from these diseases was 1,329. The number in each month was as follows:

January.....	19	July.....	438
February.....	10	August.....	446
March.....	14	September.....	192
April.....	14	October.....	35
May.....	25	November (1887).....	16
June.....	114	December (1887).....	6

The greatest number of deaths was reported for the month of August; the least number for the month of December. Of the entire number of deaths from these diseases, 1,332, Cincinnati and Cleveland together report 865, the former reporting 305, the latter 560.

The mortality per thousand of the living population represented (estimated) was 1.30.

MEASLES, SCARLET-FEVER AND WHOOPING-COUGH.

The total number of deaths reported from these causes was 365. The number in each month was as follows :

January.....	37	July	31
February	47	August.....	38
March.....	53	September	21
April.....	30	October.....	14
May.....	21	November (1887).....	17
June.....	32	December (1887).....	24

The greatest number of deaths from these diseases was reported in March, the least number in October.

The mortality per thousand of the estimated population was .35.

TYPHOID-FEVER.

The entire number of deaths reported from typhoid-fever was 695. The number in each month was as follows :

January.....	53	July.....	13
February.....	55	August	55
March.....	35	September.....	75
April.....	19	October.....	68
May.....	26	November (1887).....	171
June.....	14	December (1887).....	111

The months in which the greatest number of deaths was reported were November and December; the least number was reported June and July.

Five hundred and six of the 695 deaths from typhoid-fever were in Cincinnati and Cleveland. The population of these cities is about 54 per cent. of the entire population represented, but their deaths from typhoid-fever aggregate over 72 per cent. of the whole number of deaths from this cause.

The death rate per thousand of the estimated population of the reporting cities and towns was 68.

CONSTITUTIONAL DISEASES.

The reported number of deaths from constitutional diseases was 2,969; the number each month was as follows:

January.....	233	July.....	264
February.....	257	August.....	251
March.....	301	September.....	230
April.....	243	October.....	216
May.....	252	November (1887).....	262
June.....	227	December (1887).....	233

The greatest number of deaths was reported in March, the least number in October.

The death rate per thousand of the population represented was 2.906.

CONSUMPTION.

The number of deaths reported from consumption (phthisis pulmonalis) was 1,907.

The number reported each month was as follows:

January.....	162	July.....	144
February.....	182	August.....	148
March.....	193	September.....	132
April.....	170	October.....	130
May.....	175	November (1887).....	175
June.....	140	December (1887).....	156

The months having the greatest number of deaths reported were February and March. Those having the least number, September and October.

The mortality per thousand of the population represented was 1.86.

LOCAL DISEASES.

The total number of deaths reported from local diseases was 7,262, nearly 44 per cent. of total number of deaths from all causes.

The number reported each month was as follows:

January.....	741	July.....	514
February.....	627	August.....	523
March.....	792	September.....	466
April.....	740	October.....	466
May.....	620	November (1887).....	531
June.....	568	December (1887).....	674

The months having the greatest number of deaths reported were January and March. Those having the least number, September and October.

The death rate per thousand of the population represented was 7.109.

CONVULSIONS.

The number of deaths reported from convulsions was 873.

The number reported each month was as follows:

January.....	72	July.....	86
February.....	74	August.....	74
March.....	98	September.....	58
April.....	79	October.....	71
May.....	57	November (1887).....	52
June.....	65	December (1887).....	87

The greatest number of deaths was reported in March; the least number in November.

Six hundred and thirty-four of the 873 deaths from this cause were in Cincinnati and Cleveland, the former reporting 284, the latter 350.

The mortality per thousand of the population represented was .85.

BRONCHITIS AND PNEUMONIA.

The number of deaths reported from bronchitis and pneumonia was 1,880. The number reported each month was as follows:

January.....	254	July.....	51
February.....	214	August.....	70
March.....	253	September.....	77
April.....	252	October.....	93
May.....	170	November (1887).....	121
June.....	103	December (1887).....	222

The months having the greatest number of deaths reported were January and March. Those having the least number, were August and September.

The mortality per thousand of the population represented was 1.85.

DEVELOPMENTAL DISEASES.

The total number of deaths reported from developmental diseases (excluding premature and still-births) was 1,410.

The number of deaths reported by months was as follows:

January.....	161	July.....	133
February.....	121	August.....	110
March.....	108	September.....	103
April.....	104	October.....	112
May.....	110	November (1887).....	123
June.....	114	December (1887).....	111

The greatest number of deaths from these diseases was reported in January; the least number in September.

The mortality rate per thousand of the population of cities and towns represented, was 1.38.

FINANCIAL STATEMENT.

Balance to the credit of the State Board of Health November 1, 1887.....	\$3,050 73
Appropriation for general expenses of the Board.....	4,000 00
	\$7,050 73

General expenses of the Board for the year ending October 31, 1888, as shown per vouchers 170 to 319, inclusive:

Printing and stationery	\$1,057 20
Engraving	180 00
Postage	457 44
Books and journals	171 06
Salary and expenses of Secretary	1,766 20
Per diem and expenses of members.....	876 50
Clerical hire	800 00
Messenger.....	120 00
Express.....	73 88
Telegrams.....	11 43
P. O. Box rent.....	8 00
Chemical analysis	70 00
Ozone-scales, test-papers, etc.....	33 30
Clock.....	18 00
Vaccine virus	11 25
Office supplies and miscellaneous.....	80 27
	\$5,734 53

LIST OF LOCAL BOARDS OF HEALTH AND HEALTH OFFICERS.

Ada.....	W. H. Morrow, Clerk.
Akron.....	L. S. Ebright, M. D.
Alliance.....	James Bates, M. D.
Ansonia.....	H. A. Snorf, M. D.
Antwerp.....	B. E. Miller, M. D.
Arcanum.....	J. W. Broadrick.
Archbold.....	J. R. Hoffmire.
Ashley.....	H. M. Coomer, M. D.
Ashtabula.....	A. W. Hopkins, M. D.
Attica.....	A. W. Knight, M. D.
Bainbridge.....	L. F. House, M. D.
Barnesville.....	John B. Bulger.
Batavia.....	J. Wittenmyer, M. D.
Bedford.....	J. T. Mathews.
Bellaire.....	J. Park West, M. D.
Belle Centre.....	S. J. Pollock, M. D.
Bellefontaine.....	W. W. Roach, M. D.
Belleville.....	T. T. Austin, M. D.
Bellevue.....	John Earls.
Berea.....	F. M. Coats, Clerk.
Bethel.....	Wm. E. Thompson, M. D.
Bettsville.....	H. N. Buckingham, M. D.
Beverly.....	Frank A. Pomeroy.
Bloomington.....	H. R. Stitt, M. D.
Bloomville.....	J. W. Hoy, M. D.
Bluffton.....	J. R. Clark, M. D.
Bowling Green.....	Richard Biggs.
Bridgeport.....	.....
Bucyrus.....	C. H. Noble, M. D.
Cadiz.....	Mrs. M. J. Lyons, M. D.
Caldwell.....	L. F. Cain, M. D.
Caledonia.....	.....
Cambridge.....	T. J. Miller.
Camden.....	W. W. Canny, M. D.
Canal Dover.....	E. Armick.
Canal Fulton.....	Ed. Williams.
Canal Winchester.....	J. W. Shook, M. D.
Canfield.....	A. W. Yeates.
Canton.....	S. A. Conklin, M. D.
Cardington.....	R. T. Mills.
Carey.....	Wm. Simonia.
Carrollton.....	.....
Carthage.....	.....
Cedarville.....	Jas. R. Orr.

LIST OF LOCAL BOARDS OF HEALTH, ETC.—Continued.

Celina.....	Dr. Richardson.
Chagrin Falls.....	B. S. Easter.
Chardon .....	.....
Chicago	John Crowe.
Chillicothe.....	T. S. Barnes, M. D.
Cincinnati.....	Byron Stanton, M. D.
Circleville	S. B. Evans, Clerk.
Cleveland.....	G. C. Ashmun, M. D.
Clyde	Alex. Harnden.
Coalton.....	A. C. Messenger, M. D.
Collinwood	John S. Wood, M. D.
Columbus.....	F. Gunsaulus, M. D.
Columbus Grove.....	W. H. Begg, M. D.
Conneaut	E. D. Merriam, M. D.
Corning.....	G. W. DeLong.
Cortland.....	.....
Coshocton	Isaac Hagans.
Crestline	G. R. Edwards, M. D.
Cuyahoga Falls.....	W. S. Hough, M. D.
Dayton.....	J. M. Weaver, M. D.
Defiance.....	S. Haller, Secretary.
Delaware	Jas. M. Cherry, M. D.
DeGraff.....	J. H. Brown, M. D.
Delta.....	S. P. Bishop, M. D.
Dennison	S. L. McCurdy, M. D.
Dunkirk.....	C. C. McLaughlin, M. D.
Eaton.....	O. H. Jefferson.
East Liverpool.....	Wm. Gibbs.
East Palestine.....	A. L. LeCester, M. D.
Elyria.....	W. F. Burgert.
Elmore.....	Edward Morgan.
Fayette.....	E. J. Emerick.
Felicity	T. P. Rice.
Findlay	Amos Beardsley.
Flushing	J. V. Webster, M. D.
Forest.....	H. N. Mundy, M. D.
Fostoria	J. O. Hess.
Franklin	F. R. Evans, M. D.
Fredericksburg.....	Louis C. Miller.
Fredericktown.....	P. W. Plemmer.
Fremont.....	H. F. Hillbush, M. D.
Galion	Webb J. Kelly, M. D.
Gallipolis.....	E. Westlake, M. D.
Garrettsville	Guy Warren, M. D.
Genoa.....	G. G. Biggar, M. D.
Georgetown.....	Thos. W. Gordon, M. D.
Germantown .....	.....
Glendale.....	D. D. Mussey, M. D.
Glenville.....	Chas. B. Cook.
Glouster.....	E. F. Danford, M. D.
Granville.....	John Watkins, M. D.
Green Spring.....	D. P. Campbell, M. D.
Greenwich	Rob't H. Reynolds, M. D.
Greenville	S. M. Hagar.

LIST OF LOCAL BOARDS OF HEALTH, ETC.—Continued.

Hamilton.....	J. M. Parks, M. D.
Hamden Junction.....	L. B. Smith, M. D.
Harmar.....	John W. Knox.
Hartwell.....	C. W. Tufts, M. D.
Hicksville.....	
Hillsboro.....	H. M. Brown.
Hudson.....	Frank Hodge, M. D.
Huron.....	Jos. P. Esch, M. D.
Ironton.....	N. K. Moxley, Jr., M. D.
Jackson.....	L. May.
Jamestown.....	L. M. Jones, M. D.
Jeffersonville.....	G. M. Ireland, M. D.
Johnstown.....	Albert Dresback.
Kent.....	O. H. Newberry.
Kenton.....	L. H. Wells.
Lebanon.....	J. B. Graham, M. D.
Leetonia.....	R. T. Marks, M. D.
Leesburgh.....	H. A. Beeson, M. D.
Leipsic.....	John McClung.
Lewisburgh.....	Andrew House.
Lima.....	J. J. Murphy.
Linwood.....	Clarence Huls.
Logan.....	I. C. Wright, M. D.
Lorain.....	R. G. Van Orman.
Loudonville.....	
Louisville.....	F. E. Favret.
Loveland.....	J. M. Criley, M. D.
Lynchburgh.....	I. Holmes, M. D.
Macksburg.....	J. H. Williams.
Madison.....	A. H. Stockham, M. D.
Madisonville.....	C. P. Gray, M. D.
Mansfield.....	R. Harvey Reed, M. D.
Marietta.....	Henry Von Bergen.
Marion.....	J. K. Redd.
Massillon.....	T. Clarke Miller, M. D.
Maumee.....	
McComb.....	John A. Thompson, M. D.
McConnelsville.....	J. E. Brown, M. D.
McArthur.....	S. J. Sylvester, M. D.
Medina.....	
Mechanicsburg.....	O. A. Mincehelter, M. D.
Mentor.....	L. H. Luse, M. D.
Miamisburgh.....	H. Schoenfeld, Jr., M. D.
Middleport.....	Jay Thomas.
Middletown.....	John T. Sutphen, M. D.
Milford.....	Otto Palm, M. D.
Millersburg.....	Simon P. Wise, M. D.
Minerva.....	
Minster.....	R. A. Rulman, M. D.
Monroeville.....	John T. Gill, M. D.
Mt. Gilead.....	A. E. Young.
Mt. Pleasant.....	J. A. McGlenn.
Mt. Sterling.....	S. McClintick, M. D.
Mt. Vernon.....	E. R. Eggleston, M. D.

LIST OF LOCAL BOARDS OF HEALTH, ETC.—Continued.

Mt. Victory.....	Frank Humphreys, M. D.
Navarre.....	S. J. Shetler, M. D.
Nelsonville.....	Chas. W. Cable, M. D.
Nevada.....	W. L. Blair.
Newark.....	J. F. Mattingby, M. D.
New Carlisle.....	F. F. Young, M. D.
New Holland.....	W. L. Scurlock, M. D.
New Lexington.....	D. M. Rea.
New Lisbon.....	F. Graham.
New London.....	Jos. F. Allen.
New Matamoras.....	W. L. West, M. D.
New Paris.....	A. M. Jones, M. D.
New Richmond.....	T. J. Mullen, M. D.
New Straitsville.....	J. M. Ross.
New Washington.....	J. F. Ailer.
Niles.....	F. Caspar, M. D.
Norwalk.....	J. A. Jones.
North Amherst.....	N. S. Cornwell, M. D.
North Baltimore.....	J. D. Archer, M. D.
North Lewisburg.....	Ephraim Spain.
Oak Harbor.....	J. M. Stewart, M. D.
Oak Hill.....	D. B. Warren, M. D.
Oberlin.....	T. R. Mayhew.
Orrville.....	L. P. Grill, M. D.
Osborn.....	R. C. Hoover, M. D.
Ottawa.....	C. E. Beardsley, M. D.
Oxford.....	H. D. Hinckley, M. D.
Painesville.....	H. P. Sanford.
Pemberville.....	E. Morse.
Perrysburg.....	Jno. H. Rheinfrank, M. D.
Perrysville.....	
Piketon.....	E. G. Bateman, Clerk.
Piqua.....	E. A. Kitzmiller, M. D.
Plain City.....	M. J. Jenkins, M. D.
Plymouth.....	W. H. Sykes, M. D.
Pomeroy.....	Geo. Schwegman, Clerk.
Portsmouth.....	J. P. Bing, M. D.
Port Washington.....	
Quaker City.....	Bernard Eagon.
Ravenna.....	T. R. Mason.
Ripley.....	J. C. Hintors, M. D.
Riverside.....	A. E. Ferguson, M. D.
Roseville.....	W. A. Melick, M. D.
Rock Creek.....	J. C. Knowlton, M. D.
Rocky Ridge.....	A. E. Ferguson, M. D.
Salem.....	T. T. Church, M. D.
Salineville.....	Marion Carmine.
Seville.....	P. E. Beach, M. D.
Shawnee.....	C. E. Whittington, M. D.
Sehlby.....	M. T. Love, M. D.
Sidney.....	W. C. Wyman.
Smithfield.....	
South Charleston.....	W. H. Collins, M. D.
Springboro.....	David Merring.

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St. Mary's	W. B. Shoonover, M. D.
St. Clairsville	D. L. Walker, M. D.
St. Paris.....	A. C. Offenbacher.
St. Bernard	Sidney D. Spence, M. D.
Sunbury	G. H. Gerhardt, M. D.
Sylvania	Thos. Cosgrove, M. D.
Tiffin.....	H. H. Noble, M. D.
Toledo	G. A. Collamore, M. D.
Troy	
Urbana.....	S. M. Mosgrove, M. D.
Union City	Wm. M. Grimes.
Upper Sandusky	O. C. Stutz, M. D.
Utica	Joel Maconsber.
Van Wert ..	E. L. Wilkinson.
Versailles.....	W. H. Pike, M. D.
Wadsworth	H. H. Bricker.
Warren.....	S. H. Smith, M. D.
Washington C. H.....	J. M. Edwards.
Wapakoneta	R. B. Anderson.
Wauseon	L. E. Miley, M. D.
Washingtonville.....	O. A. Rhodes, M. D.
Wellington	J. W. Smith, M. D.
Wellston	C. B. Harrison, M. D.
Wellsville	Jos. F. Davidson.
West Alexandria.....	L. J. Ashworth.
Westerville	J. F. Knox.
West Cleveland	John Bell.
West Liberty	B. S. Leonard, M. D.
West Salem.....	B. M. McCauley, M. D.
Weston.....	E. W. Schooley, M. D.
West Milton	John W. Tuthill, M. D.
White House	F. M. Heath.
Williamsburg.....	
Williamsport	G. O. Hayes, M. D.
Willshire.....	J. F. Shaffner.
Winchester	W. A. McClain, M. D.
Wooster	Jos. E. Barrett, M. D.
Youngstown	W. L. Buechner, M. D.
Xenia	A. L. Dryden, M. D.

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Dr. J. M. Lockhart.....	Eckmansville.
Dr. J. W. Guthrie.....	Manchester.
Dr. W. B. Graham	Vineyard Hill.
Dr. J. S. Berry.....	Peebles.
Dr. J. M. Wittenmyer.....	Peebles.
Dr. R. R. Hopkins.....	Cherry Fork.
Dr. E. D. L. Morgan	Dunbarton.
Dr. C. S. Corboy.....	Winchester.
Dr. W. K. Coleman	West Union.
Dr. W. A. McClain.....	Winchester.
Dr. O. C. Hook.....	Lovetts.

ALLEN COUNTY.

Dr. N. Sager, jr	Herring.
Dr. Jas. Baker	Harrod.
Dr. E. G. Burton	West Minster.
Dr. Frank Ewing.....	West Cairo.
Dr. J. R. Welch.....	Spencerville.
Dr. A. F. Fullerton.....	Rockport.

ASHLAND COUNTY.

Dr. S. Z. Davis.....	Jeromesville.
Dr. S. N. Alban	Perrysville.
Dr. C. D. Sacket.....	Mifflin.
Dr. A. J. Scott.....	Londonville.

ASHTABULA COUNTY.

Dr. S. D. Allen.....	Harbor.
Dr. H. W. Dorman	Harbor.
Dr. H. N. Kinnear.....	Harbor.
Dr. W. O. Ellsworth	Austinburg.
Dr. W. A. Ward	Conneaut.
Dr. J. Lee Richmond	Conneaut.
Dr. Marcus Kingsley.....	Kingsville.
Dr. C. T. Grover.....	Orwell.
Dr. A. W. Hopkins.....	Ashtabula.
Dr. W. H. Sykes.....	Plymouth.
Dr. C. H. Quayle.....	Dodgeville.

ATHENS COUNTY.

Dr. E. F. Danford	Glouster.
Dr. H. D. Danford.....	Trimble.
Dr. E. L. Carlton	Coolville.
Dr. Chas. W. Cable	Nelsonville.
Dr. C. Barker	Marshfield.
Dr. B. C. Vorhes.....	Lee.

AUGLAIZE COUNTY.

Dr. B. M. Pahl.....	Findlay.
Dr. A. D. Brutaker.....	New Hampshire.
Dr. Chas. N. Potts.....	New Bremen.
Dr. C. A. Sheels	Saint Mary's.
Dr. C. L. Dine.....	Minster.
Dr. W. S. Turner.....	Waynesfield.
Dr. R. B. Anderson	Wapakoneta.

BELMONT COUNTY.

Dr. B. O. Williams	Martin's Ferry.
Dr. D. Q. Steere	Bellaire.
Dr. W. A. Fisher.....	Bridgeport.
Dr. J. V. Webster.....	Flushing.
Dr. W. J. McCalvin.....	Barnesville.
Dr. E. E. Kirk	Flushing.

BROWN COUNTY.

Dr. S. B. Sheldon.....	Five Mile.
Dr. A. M. Williamson.....	Russelville.
Dr. J. L. Baird.....	Fincastle.
Dr. L. C. Laycock.....	Decatur.
Dr. J. N. Salisbury	Russelville.
Dr. J. J. Quinn.....	Fayetteville.

BUTLER COUNTY.

Dr. H. A. Williamson.....	Glendover.
Dr. J. B. Porter.....	Oxford.
Dr. A. J. Wesco	Seven Mile.
Dr. Jas. Macready.....	Monroe.
Dr. C. C. Hoover.....	Ross.
Dr. J. M. Hunt.....	Blue Ball.

CARROLL COUNTY.

Dr. John M. Watt.....	Mechanicstown.
Dr. J. R. Williams.....	Carrollton.
Dr. J. B. Frances.....	Harlem Springs.
Dr. J. T. Beall.....	Sherodsville.

CHAMPAIGN COUNTY

Dr. W. J. Green	Woodstock.
Dr. John H. Clark.....	Mechanicsburg.
Dr. H. S. Preston.....	Mutual.
Dr. W. N. Unkefer	Mingo.

CLARKE COUNTY.

Dr. A. W. Mitchell.....	Dialton.
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CLERMONT COUNTY.

Dr. R. C. Belt.....	Milford.
Dr. W. A. Carmichael.....	Loveland.
Dr. S. B. Judkins.....	Marathon.
Dr. A. M. Martin & Son.....	Bloomville.
Dr. N. S. Hill	Neville.
Dr. J. H. Kinkead	Felicity.
Dr. Isaac Redrow	Williamsburg.
Dr. W. B. Doan	Amelia.
Dr. Julius D. Abbott.....	Bethel.
Dr. C. Y. M. Kibber.....	Moscow.
Dr. A. Morris.....	Goshen.

CLINTON COUNTY.

Dr. C. E. Vance.....	Martinsville.
Dr. Lyman Watkins.....	Blanchester.
Dr. A. F. Deniston.....	Westboro.
Dr. S. B. Lightner.....	Sabina.

COLUMBIANA COUNTY.

Dr. A. M. Ailes.....	Damascus.
Dr. D. M. Bloom	New Waterford.
Dr. S. R. Breed.....	Wellsville.
Dr. A. S. McCaskey.....	East Palestine.
Dr. A. G. Vale.....	Clarkson.
Dr. F. M. Clark.....	Salem.
Dr. W. M. Calhoon	E. Liverpool.
Dr. T. T. Church.....	Salem.
Dr. J. M. Hole.....	Salem.
Dr. B. C. Batton.....	Kensington.
Dr. F. Graham.....	New Lisbon.
Dr. R. T. Marks.....	Leetonia.

COSHOCOTON COUNTY.

Dr. A. E. Walker	Plainfield.
Dr. E. C. Carr.....	Coshocoton.
Dr. S. C. Lightner.....	Keene.
Dr. S. A. Stacy.....	Coshocoton.
Dr. J. D. Lower.....	Bakersville.

CRAWFORD COUNTY.

Dr. G. R. Edwards	Crestline.
Dr. J. B. Kreider.....	Bucyrus.
Dr. Thomas F. Kellar	New Washington.
.....	Galion.
Dr. James Robinson	Galion.
Dr. F. W. Schwan.....	Poplar.

CUYAHOGA COUNTY.

.....	Cleveland.
Dr. C. L. Kinnaman	Cleveland.
Dr. I. N. Noland	Independence.
Dr. W. A. Knowlton	Brecksville.
.....	Chagrin Falls.
Dr. A. L. Waltz.....	Collinwood.
Dr. R. S. Hubbard	Bedford.
Dr. J. F. Hobson.....	Rocky River.
Dr. J. T. Frizzell	Bedford.

DARKE COUNTY.

Dr. O. B. Longanecker.....	Castine.
Dr. E. W. Longanecker.....	Hillgrove.
Dr. H. A. Snorff.....	Ansonia.
Dr. S. M. Hager.....	Greenville.
Dr. C. F. Ryan.....	Gettysburg.
.....	Versailles.
Dr. J. F. Adams.....	Yorkshire.
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Dr. A. H. Sager.....	Farmer.
Aldrich Bros.....	Defiance.
Dr. L. G. Thacker.....	Defiance.
Dr. J. J. Reynolds.....	Defiance.
Dr. S. Hallet	Defiance.
Dr. D. F. Welty.....	Mark Center.

DELAWARE COUNTY.

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Dr. Thos. J. Williams	Sunbury.
Dr. H. W. Coomer.....	Ashley.
Dr. F. L. Gage.....	Berkshire.

ERIE COUNTY.

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Dr. J. P. Esch.....	Huron.
Dr. G. C. Ehrhart	Sandusky.
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Dr. J. T. Hufford.....	Clearport.
Dr. W. S. Rutter.....	Clearport.
Dr. G. A. Harman.....	Lancaster.
Dr. O. P. Driver.....	Basil.
Dr. T. W. Le Crone	Millersport.

FAYETTE COUNTY.

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Dr. J. S. Mason	Milledgeville.
Dr. G. M. Inland.....	Jeffersonville.
Dr. J. M. Edwards.....	Washington C. H.

FRANKLIN COUNTY.

.....	Columbus.
Dr. Frank Warner	Columbus.
Dr. O. Johnson	Worthington.
Dr. L. Woodruff	Alton.
Dr. W. H. Blake	Shadeville.
Dr. A. L. McLeod	Central College.

FULTON COUNTY.

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Dr. A. B. Lathrop.....	Swanton.
Dr. L. A. Bassett.....	Swanton.
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GALLIA COUNTY.

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GEAUGA COUNTY.

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Dr. W. G. Hier	Madisonville.
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Dr. J. O. Marsh.....	Madisonville.
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Dr. E. A. Flinn.....	Madisonville.
Dr. R. P. Joyce	Sater.

HANCOCK COUNTY.

Dr. W. S. Van Horn.....	Findlay.
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Dr. J. A. Stansell.....	Forest.
Dr. H. N. Mundy	Forest.

HARRISON COUNTY.

Dr. J. M. Welsh.....	Deerville.
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Dr. C. M. Thompson	Hamlet.
Dr. D. J. M. Stout.....	Holgate.
Dr. T. C. Hunter.....	Napoleon.

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Dr. Rufus A. Dwyer	New Petersburg.
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Dr. B. S. Leonard	West Liberty.
Dr. D. N. McBride	Rainsboro.
Dr. F. M. Thomas	Samantha.

HOCKING COUNTY.

Dr. J. H. Donaldson.....	Gore.
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HOLMES COUNTY.

Dr. M. W. Webb.....	Nashville.
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Dr. J. F. Miller	Bellevue.
Dr. L. D. Strutton.....	Norwalk.
Dr. Franklin Burt.....	Norwalk.

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LAKE COUNTY.

Dr. C. M. Hawley.....	Painesville.
Dr. R. L. Ashley.....	Perry.

LAWRENCE COUNTY.

Dr. F. H. Williams.....	Burlington.
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Dr. A. J. Follet.....	Granville.
Dr. A. E. Smith.....	Utica.
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Dr. L. Prater.....	Lake View.
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Dr. John Wallace.....	Rushville.

Dr. N. V. Speece	Quincy.
Dr. F. M. Galer.....	DeGraff.
Dr. Ben. S. Leonard.....	West Liberty.
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Dr. E. Bradley.....	Whitehouse.
Dr. F. M. Heath.....	Whitehouse.
Dr. G. A. Collamore.....	Toledo.

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Dr. Ambrose Ogan.....	Sedalia.
Dr. F. N. Mattoon.....	Plain City.
Dr. C. M. Dean.....	Range.
Dr. F. McClintock.....	Mt. Sterling.

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Dr. W. C. Stafford.....	New Springfield.

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Dr. Charles Bueneke.....	Marion.
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Dr. J. L. Mason.....	Stafford.
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Dr. A. M. Williamson.....	Dayton.
Dr. J. C. Reeves, Jr.....	Dayton.
Dr. W. H. Riley.....	Pymont.
Dr. C. F. Zinn.....	Miamisburg.
Dr. W. P. Weaver.....	Miamisburg.

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Dr. J. E. Brown.....	McConnelsville.
Hon. LeRoy Holcomb.....	Pennsville.

MORROW COUNTY.

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Dr. A. A. Nefe.....	Whetstone.

MUSKINGUM COUNTY.

Dr. J. T. Davis.....	Zanesville.
Dr. J. S. Haldeman.....	Zanesville.
Dr. A. E. Bell.....	Zanesville.
Dr. A. W. Squires.....	White Cottage.
Dr. C. M. Taylor.....	Adams' Mills.
Dr. G. P. Walker.....	Roseville.
Dr. O. B. Crumbaker.....	Duncan's Falls.

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Dr. O. O. McKee.....	Caldwell.

OTTAWA COUNTY.

Dr. F. J. Klussman.....	Elliston.
Dr. Paul de la Barre.....	Port Clinton.
Dr. J. J. Bricker	Elmore.
Dr. D. Barringer.....	Rocky Ridge,

Dr. Geo. Vinnig.....	Oak Harbor.
Dr. S. D. Allen.....	Oak Harbor.

PAULDING COUNTY.

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Dr. Levi Stearns.....	Cecil.
Dr. C. W. Gordon.....	Dague.

PERRY COUNTY.

Dr. A. P. Gordon.....	Junction City.
Dr. R. B. Woodward.....	Somerset.
Dr. M. W. Cummings.....	Moxahala.
Dr. F. D. Wygum.....	Maxville.
Dr. H. C. Allen.....	New Straitsville.

PICKAWAY COUNTY.

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Dr. John B. May.....	New Hoiland.
Dr. H. F. Truman.....	Genoa.
Dr. G. C. Hayes.....	Williamsport.

PIKE COUNTY.

Dr. Austin Hutt.....	Waverly.
Dr. J. L. Caldwell.....	Waverly.
Dr. J. W. Little.....	Cynthiana.

PORTAGE COUNTY.

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Dr. C. F. Dyson.....	Hiram.
Dr. W. F. Betts.....	Randolph.
Dr. O. A. Lyon.....	Atwater.
Dr. L. L. Johnson.....	Garrettsville.

PREBLE COUNTY.

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Dr. E. Holaday.....	West Elkton.
Dr. M. E. Williamson.....	New Paris.
Dr. F. C. Gray.....	Lewisburg.
Dr. J. A. Davisson.....	El Dorado.
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PUTNAM COUNTY.

Dr. C. E. Beardsley.. ..	Ottawa.
Dr. Joseph Morris.....	Columbus Grove.
Dr. E. H. Bird.....	Dupont.
Dr. C. F. Douglas.....	Kalida.
Dr. A. C. Matthias.....	Gilboa.
Dr. John McClung.....	Leipsic.

RICHLAND COUNTY.

Dr. S. P. Dyer Bellville.

ROSS COUNTY.

Dr. J. M. Wiltshire..... Gillespieville.
 Dr. W. E. Pricer..... South Salem.
 Dr. T. S. Barnes..... Chillicothe.

SCIOTO COUNTY.

Dr. J. S. Frizell..... Buena Vista.
 Dr. C. C. Fulton..... Portsmouth.
 Dr. J. P. Bing..... Portsmouth.

SENECA COUNTY.

Dr. G. L. Hoege..... Fostoria.
 Dr. A. W. Knight..... Attica.

SHELBY COUNTY.

Dr. E. A. Steely Anna.
 Dr. C. E. Johnson Sidney.
 Dr. A. W. Grosvenor..... Hardin.
 Dr. G. M. Tate..... Botkins.
 Dr. J. F. Miller Port Jefferson.
 Dr. J. F. Hamsher..... Tawawa.
 Dr. C. E. Whittington..... Shawnee.

STARK COUNTY.

Dr. W. O. Baker..... Louisville.
 Dr. J. L. Beuclair Louisville.
 Dr. Leon B. Santee Marlboro.
 Dr. E. J. March..... Canton.
 Dr. Lew Slusser..... Canton.
 Dr. D. S. Gardener..... Massillon.

SUMMIT COUNTY.

Dr. W. S. Hough..... Cuyahoga Falls.
 Dr. Seth Freeman Twinsburg.
 Dr. G. L. Starr..... Hudson.
 Dr. H. C. Coolman Hudson.
 Dr. E. W. Howard Akron.

TRUMBULL COUNTY.

Dr. A. W. Thompson..... Bristolville.
 Dr. C. M. Rice..... Newton Falls.
 Dr. W. J. Haine..... West Farmington.

TUSCARAWAS COUNTY.

Dr. A. T. Miller.....	Shanesville.
Dr. T. H. Brannan.....	Canal Dover.
Dr. S. R. Brandon.....	Uhrichsville.
Dr. S. R. Thompson.....	Uhrichsville.
Dr. J. T. McLean.....	New Philadelph'ia.

UNION COUNTY.

Dr. J. B. Taylor.....	Broadway.
Dr. W. C. Vigor.....	New California.
Dr. W. H. Wills.....	Milford Center.
Dr. R. H. Graham.....	Marysville.

VAN WERT COUNTY.

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Dr. R. L. Crooks.....	Convoy.
Dr. G. H. Williamson.....	Delphos.
Dr. L. E. Ladd.....	Middlepoint.
Dr. W. C. Hastings.....	Van Wert.
Dr. E. L. Wilkinson.....	Van Wert.
Dr. C. B. Reid.....	Dasie.

VINTON COUNTY.

Dr. J. V. Sylvester.....	McArthur.
Dr. G. K. Ewing.....	Wilkesville.
Dr. L. B. Smith.....	Hamden Junct'n.
Hon. S. W. Monahan.....	Hamden Junct'n.

WARREN COUNTY.

Dr. J. M. Van Dyke.....	Mason.
Dr. L. Pampel.....	Cozaddale.
Dr. J. B. Collins.....	Butlerville.
Dr. J. B. Graham.....	Lebanon.
Dr. W. L. Brown.....	Lebanon.
Dr. S. S. Seoville.....	Lebanon.
Dr. Charles Cropper.....	Lebanon.
Dr. W. F. Moss.....	Mainville.
Dr. J. W. Smith.....	Harveysburg.
Dr. W. M. Greenlee.....	Waynesville.

WASHINGTON COUNTY.

Dr. C. K. Andrews.....	Steel Run.
Dr. Ellis Fleming.....	Wingett Run.

WAYNE COUNTY.

Dr. W. F. Oldroyd.....	Shreve.
Dr. W. S. Battles.....	Shreve.
Dr. C. L. Kinnaman.....	West Salem.
Dr. C. M. McCaulay.....	West Salem.

Dr. E. E. Ash.....	Fredericksburg.
Dr. A. S. Kinnaman	West Salem.
Dr. Lorain Isenberg.....	Shreve.
Dr. W. T. Barnes.....	Fredericksburg.

WILLIAMS COUNTY.

Dr. G. E. Starner.....	Blakeslee.
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Dr. G. Higgins.....	Bowling Green.
Dr. W. M. Tuller.....	Bowling Green.
Dr. M. A. McKendree.....	Bowling Green.
Dr. John H. Rheinfrank	Perrysburg.

WYANDOT COUNTY.

Dr. I. N. Bowman	Upper Sandusky.
Dr. A. H. McCrory.....	Nevada.
Dr. R. L. Souder.....	Nevada.
Dr. J. M. Wilcox.....	Nevada.
Dr. Odenbaugh	Wharton.
Dr. F. W. Brayton	Carey.
Dr. D. W. McConnell....	Marseilles.

